# CALCASIEU LOCK LOUISIANA
# FEASIBILITY STUDY

## APPENDIX A

## BIOLOGICAL ASSESSMENT

**CALCASIEU LOCK LOUISIANA**
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**Revised - February 2014**

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## I. INTRODUCTION AND BACKGROUND INFORMATION

Section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended, requires that, *"Each Federal agency shall, in consultation with and with the assistance of the secretary, insure that any action authorized, funded, or carried, out by such agency…. Is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species…"*. This Biological Assessment (BA) provides the information required pursuant to the ESA and implementing regulation (50 CFR 402.14), to comply with the ESA. Additional jurisprudence includes the National Environmental Policy Act (NEPA) of 1969, 42 U.S.C. section 4321, *et seq.;* the Fish and Wildlife Conservation Act of 1958 (PL 85-624; 16 U.S.C. 661 *et seq*.); the Marine Mammal Protection Act of 1972; and the Bald Eagle Protection Act of 1940.

**A. Overview.** This Study addresses navigation improvement planning for the GIWW at and in the vicinity of Calcasieu Lock, Calcasieu Parish, LA. This Study was developed from the results of the GIWW Locks, Louisiana Reconnaissance Report, completed in May 1992. The Report involved a systems analysis of the GIWW locks west of the Mississippi River. It documented the need for replacements or improvements at Bayou Sorrel, Calcasieu, and Port Allen locks. This resulted in a 905(b) Reconnaissance Report specifically for Calcasieu Lock that was completed in 2001 and which found justification and Federal interest in further feasibility level study of the navigation delays and potential solutions at Calcasieu Lock.

**B. Purpose of Project.** The principal problem to be addressed is the delays to navigation induced through operation of the Calcasieu Lock for drainage of the Mermentau River Basin as part of its authorized purpose. The primary opportunities are to reduce or eliminate commercial traffic delays and improve the national and regional economic conditions. The need to maintain the effectiveness of Calcasieu Lock as a salinity barrier for the Mermentau Basin is critical.

Opportunities exist to increase navigation efficiency through improved operational routines and potential modification of the existing structure to accommodate existing and future traffic. Further opportunities exist to reduce or eliminate navigation delays due to drainage. A drainage event occurs when a rainfall or storm surge event within the Mermentau Basin results in a 3ft. reading at the Calcasieu East gage. This causes operations at Calcasieu Lock to switch from a locking operation with sector gates closed; preventing salinity intrusion, to a drainage operation with sector gates open forcing tows to wait to transit the lock until the gage moves below 3feet. Altering the existing lock structure to decrease the impacts of drainage events on transiting tows will result in shorter lockage times and delays for tows staging at either segment of the GIWW (east or west). Fewer barge reconfigurations to allow for transit during drainage events will increase cycling times of tows through the lock. An additional or wider lock chamber would allow for passing of flows through the old lock or through a new wider lock that can accommodate drainage events and lockages. Redirecting completely or partially drainage flows away from the existing lock will reduce or eliminate the delays that result.

## II. PROJECT AREA

**A. Project Location.** Calcasieu Lock is located on the GIWW, just east of the Calcasieu River, in Calcasieu Parish, LA, approximately 10 miles south of Lake Charles, LA (figure A-1). Calcasieu Lock is a critical component of the LA portion of the GIWW, along with its location in the Chenier Plain and being the junction of the Mermentau and Calcasieu River Basins. Therefore the primary Study area is the Lock and immediate vicinity; however a broader approach was taken in assessing environmental, economic and hydraulic conditions and potential impacts. Potential environmental impacts are localized in nature but given the dynamic coastal environment Calcasieu Lock is located in, the Chenier Plain sub region of the coast was evaluated.

The Calcasieu River and Pass Ship Channel is located in southwest Louisiana in Calcasieu and Cameron Parishes, extending from Lake Charles, LA, southward into the Gulf of Mexico. The existing Calcasieu River and Pass Navigation project provides deep-draft navigation access to oil refineries, chemical plants, liquefied natural gas (LNG) plants, and other facilities along the Calcasieu River.

The Calcasieu River and Pass Ship Channel project provides a 35- to 40-foot project depth channel from deep water in the Gulf of Mexico. The gulf reach of the channel is 42 feet deep, 800 feet wide, and it extends about 32 miles from the minus 42-foot Mean Low Gulf (MLG) contour to the Gulf shore. A 40- by 400-foot channel extends from the gulf shoreline about 34 miles upstream to the wharves of the Port of Lake Charles, and a 35- by 250-foot channel that extends further upstream another 2 miles to the vicinity of the Interstate 10 bridge in Lake Charles, LA. Turning basins are located at Mile 29 and Mile 36.

Construction of the Calcasieu Lock largely halted Calcasieu Ship Channel (CSC)-induced saltwater intrusion into the Mermentau Basin via the GIWW. At the same time, deepening of the CSC increased tidal amplitude, resulting in higher high tides and lower low tides. Thus, when the tide ebbs, a greater head differential is established on either side of the Calcasieu Lock. This increase in head resulted in a more efficient drainage pathway for Mermentau River freshwater inflows because the drainage potential is so much greater there than at the Catfish Point Control Structure, where drainage opportunity is very limited.

The Calcasieu Lock (figure A-2) is located at the intersection of the Calcasieu River and mile 238 of the GIWW. It serves as a barrier preventing saltwater intrusion from the Calcasieu from entering the rice-growing areas of the Mermentau Basin via the GIWW. It is also provides flood risk management benefits when used to drain the Mermentau Basin after storm events. It operates in conjunction with Leland Bowman Lock and Catfish Point and Schooner Bayou control structures.

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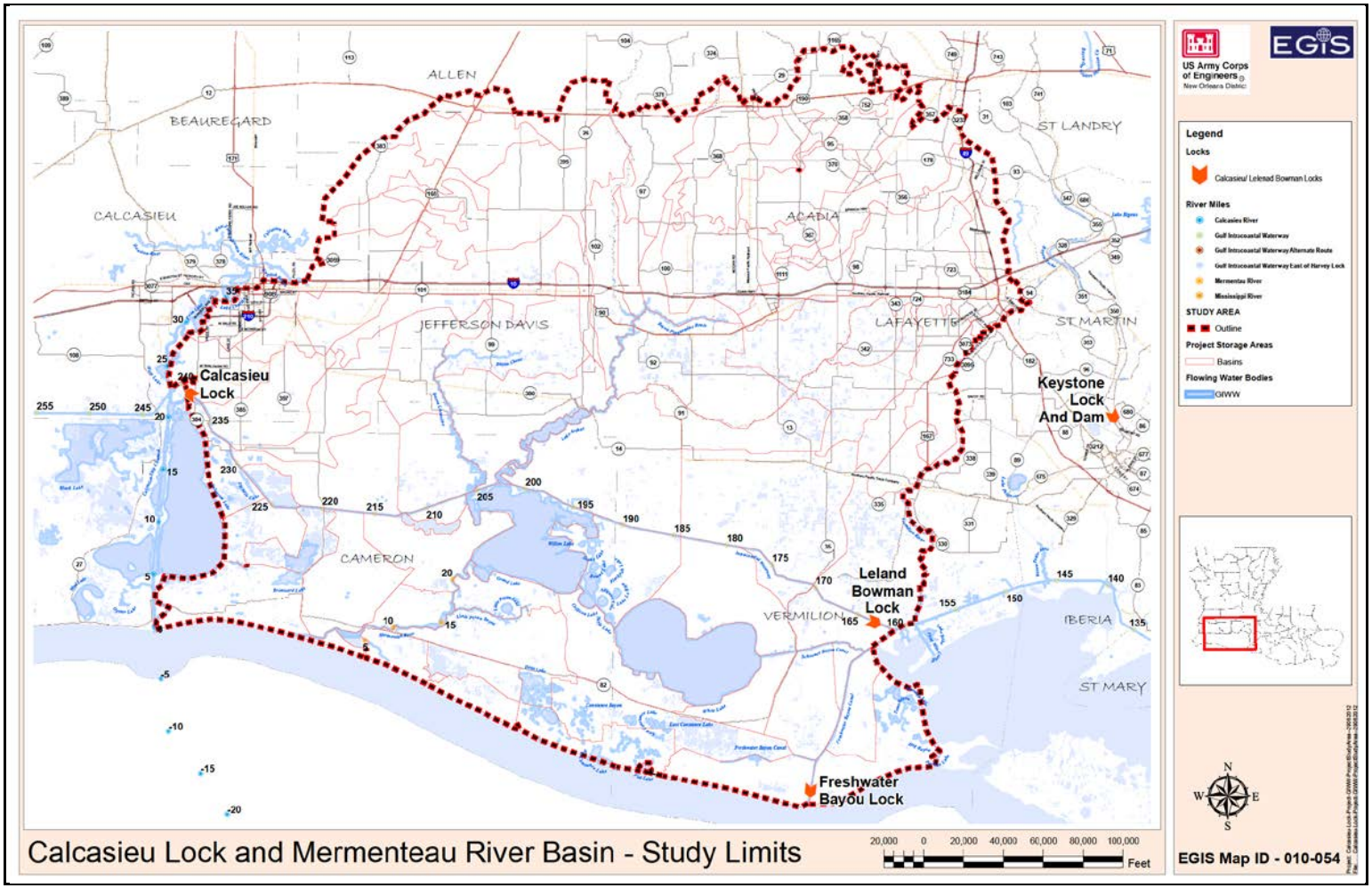


**Figure A-1.** Calcasieu Lock Study Area

**Figure A-2.** Aerial View of Calcasieu Lock

**B. Project Area Description.** The project area consists of open water ponds and lakes, cheniers, Gulf shorelines, and freshwater, intermediate, brackish, and saline marsh. Visser et al. (2000), expanding on previous studies by Penfound and Hathaway (1938) and Chabreck (1970), classified freshwater marsh in the Chenier Plain as a combination of *Panicum hemitomon* (maidencane) and *Sagittaria lancifolia* (bulltongue arrowhead); Intermediate marsh as *Cladium jamaicense* (sawgrass), *Spartina patens* (saltmeadow cordgrass), and *Schoenoplectus californicus* (California bulrush); brackish marsh as saltmeadow cordgrass, *Schoenoplectus americanus* (chairmaker's bulrush), *Schoenoplectus robustus* (sturdy bulrush); and saline marsh as *Spartina alterniflora* (smooth cordgrass), *Juncus roemerianus* (needlegrass rush), and *Distichlis spicata* (saltgrass). Submerged aquatic vegetation (SAV), such as *Ruppia maritima* (widgeongrass), also occurs in the area.

Additionally, the following four communities, documented by the Louisiana Natural Heritage Program, are important in that they contribute to the diversity and stability of the coastal ecosystem and may be present within the study area.

- **Coastal Live Oak-Hackberry Forest.** Also known as chenier maritime forest, this natural community formed on abandoned beach ridges primarily in southwest Louisiana. Composed primarily of fine sandy loams interbedded with sand and shell debris, these ridges range in height from 4 to 5 feet above sea level. Live oak and hackberry are the dominant canopy species. Other common species include red maple, sweet gum, water oak, green ash, and American elm. Of the original 100,000 to 500,000 acres in Louisiana, only 2,000 to 10,000 acres remain.
- **Coastal Dune Grassland.** Coastal dune grasslands occur on beach dunes and elevated backshore areas above intertidal beaches. Louisiana's coastal dunes are poorly developed because of the high frequency of overwash associated with hurricanes and storms, and a limited amount of eolian-transported sand. Vegetative cover ranges from sparse to fairly dense and is dominated by salt spray tolerant grasses. Coastal dune grasslands are estimated

to have occupied less than 2,000 acres in pre-settlement times, and 50 to 75 percent was thought to remain prior to the 2005 hurricanes. Some of the most extensive examples of coastal dune grasslands in Louisiana occur in the Chenier Plain.

- **Coastal Prairie.** The Coastal Prairie can be divided into two main types, upland dry to mesic prairies at the northern end of its range, and marsh fringing prairies on "islands" or "ridges" in the marsh at the southern end of its range. The soil conditions and frequent burning from lightning strikes prevented invasion by woody trees and shrubs and maintained the prairie vegetation. Coastal prairie vegetation is extremely diverse and dominated by grasses. Remnant Louisiana coastal prairies, once covering an estimated 2.5 million acres, have been reduced to less than 1 percent of the original extent. Some of the larger prairie remnants are marsh fringing, wet prairies found in Vermilion and Cameron Parishes.
- **Freshwater Marsh.** Freshwater marsh is generally located adjacent to intermediate marsh along the northern extent of the coastal marshes. Salinities are usually less than 2 parts per thousand (ppt) and normally average about 0.5-1 ppt. Freshwater marsh has the greatest plant diversity of any of the marsh types. Although the freshwater marshes, as previously described, compose a large amount of the entire coastal marsh acreage, the Louisiana Natural Heritage Program ranks this community as imperiled because it has undergone the largest reduction in acreage of any of the marsh types over the past 20 years due to saltwater intrusion. Some of the largest contiguous tracts of freshwater marsh in Louisiana occur in Vermilion and Cameron Parishes.

## III. SPECIES AND HABITAT IN THE PROJECT AREA

**A. Wildlife.** Coastal Louisiana's wetlands support millions of neotropical and other migratory avian species such as rails, gallinules, shorebirds, wading birds, and numerous songbirds, as well as many different furbearers, rabbits, deer, and alligators. Louisiana coastal wetlands provide neotropical migratory birds an essential stopover habitat on their annual migration route. The coastal wetlands in the Study area provide important and essential fish and wildlife habitats used for shelter, nesting, feeding, roosting, cover, nursery, and other life requirements.

The Chenier Plain provides habitat for a large variety of wintering waterfowl, breeding wading birds, and migratory land birds. Cheniers attract thousands of trans-Gulf migrant birds during their peak migratory months of April to May and August through October. The majority of these birds fly to and from parts of Mexico, and the cheniers offer the birds an important stop-over on their migration. Millions of ducks and geese also use the area from September through February. Over 300 species of birds have been recorded in the area, making this region a popular destination for visiting birders, wildlife photographers, and hunters.

Both resident species and non-resident migratory species of birds are found in the Calcasieu River area. The forested lands and cheniers provide nesting habitat for songbirds including the mockingbird, yellow-billed cuckoo, brown thrasher, and northern parula. At least 82 species of migratory birds regularly use these wooded habitats as important stop-over habitat during annual migrations (Lester et al. 2005). The marshes provide important areas for winter grounds and resting and feeding grounds for migratory waterfowl including green-winged teal, blue-winged teal, mottled duck, gadwall, American widgeon, and lesser scaup. Year round resident bird species include wild turkey, doves,

bobwhite quail, swallows, and sparrows. Birds of prey include owls, red-tailed and red-shouldered hawks, and kestrels. Wading and aquatic birds such as anhinga, great egret, and great blue herons typically occur in wooded swamp and scrub-shrub habitat. White and brown pelicans, herons, egrets, ibises, and gulls are also found feeding in the estuarine marshes and open water habitats in the study area. Other non-game species including boat-tailed grackle, red-winged blackbird, olivaceous cormorant, belted kingfisher, and sedge wren also utilize estuarine marshes.

The Mermentau River basin also provides habitat for similar species of wintering waterfowl, breeding wading birds, and migratory land birds. Over 300 species of birds have been recorded in the basin. Trans-Gulf migrant warblers, vireos, tanagers, thrushes, and other birds are found in large numbers during peak migration (April to May and August to October).

Mammals present in the study area include important game species such as white-tailed deer, eastern cottontail and swamp rabbits, and gray and fox squirrels; furbearers such as river otter, muskrat, and nutria; and other mammal species such as striped skunk, coyote, nine-banded armadillo, and Virginia opossum. Smaller mammals including the cotton rat, marsh rice rat, and white-footed mouse provide a food source for both larger mammals and avian carnivores.

Reptiles found in the Study area include the American alligator and the diamond-backed terrapin. Reptiles which use the forested uplands in the previously used disposal areas and other higher elevations include the ground skink, five-linked skink, green anole, western ribbon snake, and numerous other species. Small-mouthed salamander, green tree frog, bullfrog, and southern leopard frog are some of the amphibians that are known to occur in the vicinity of the Study area.

**B. Fisheries.** Louisiana's coastal estuaries are the most productive in the Nation. Louisiana has historically been an important contributor to the Nation's domestic fish and shellfish production, and one of the primary contributors to the Nation's food supply for protein. Most of the economically important saltwater fishes and crustaceans harvested in Louisiana spawn offshore and then use estuarine areas for nursery habitat (Herke 1995). Landings in 2010 for commercial fisheries in coastal Louisiana, estimated at one billion pounds, were the largest for any state in the contiguous U. S. and second only to Alaska [National Marine Fisheries Service (NMFS) 2011]. These landings represent over twelve percent of the total landings in the U.S., with a value of approximately $247.9 million. Total fish and shellfish landings for ports in the vicinity of the Study area (Cameron and Intracoastal City) were 411 million pounds in 2010 with a dockside value of approximately $38 million (NMFS Fisheries Statistics Division 2011 – personal communication).

The Chenier Plain is also a popular destination for recreational fishing. The area's diverse wetland ecosystems provide habitat for a variety of fresh- and saltwater fish and shellfish, including shrimp, crawfish, blue crab, spotted sea trout, red drum (redfish), and red snapper. Freshwater sport fish include largemouth bass, crappie, bluegill, and catfish. Furthermore, the Study area provides important habitat for a variety of smaller fishes and crustaceans (e.g., grass shrimp, silversides, anchovies), which are important prey items for many of the commercially and recreationally important species.

## IV. FEDERALLY PROTECTED SPECIES ACCOUNTS

The USFWS provided a list of threatened and endangered species potentially occurring within the project area in a planning aid report completed in February 2012. This list was updated by consulting the Service's website (http://www.fws.gov/lafayette/pdf/LA_T&E_Species_List.pdf, list updated December 16, 2013) of endangered, threatened, and candidate species of Louisiana, and noting the distribution in Calcasieu and Cameron parishes.

In addition, in response to the 45-day public review of the draft integrated feasibility report and environmental impact statement for this project that began on October 4 and ended on December 2, 2013, the U.S. Department of the Interior provided a comment letter dated November 13, 2013 that stated "sea turtles are known to occur at least as far inland as the north shore of Calcasieu Lake and could potentially occur in the project area." In addition, with regard to the West Indian manatee, the letter also stated that "it has been sighted northward of the project area in Calcasieu River and Pass and could potentially occur in the project area." These species are listed in table A-1 and descriptions of the species and their associated habitats can be found in the text that follows.

**Table A-1.** Threatened and Endangered Species Potentially Occurring in the Project Area

| Species | Federal | State | Critical Habitat | Calcasieu Parish | Cameron Parish |
|---|---|---|---|---|---|
| American Alligator (*Alligator mississippiensis*) | E | E | | ✓ | ✓ |
| Green sea turtle (*Chelonia mydas)* | T | T | | ✓[4] | ✓ |
| Gulf Sturgeon (*Acipenser oxyrinchus desotoi*) | T | T | | | ✓[5] |
| Hawksbill sea turtle (*Eretmochelys imbricata*) | E | E | | ✓[4] | ✓ |
| Kemp's Ridley sea turtle (*Lepidochelys kempii*) | E | E | | ✓[4] | ✓ |
| Leatherback sea turtle (*Dermochelys coriacea*) | E | E | | ✓[4] | ✓ |
| Loggerhead sea turtle (*Caretta caretta)* | T | T | | | ✓ |
| Piping Plover (*Charadrius melodus)* | T | T | ✓[2] | | ✓ |
| West Indian Manatee (*Trichechus manatus*) | E | E | | ✓ | ✓ |
| Sprague's pipit (*Anthus spragueii*) | C[1] | NL[3] | | ✓ | ✓ |

[1] C = candidate species
[2] critical habitat is used for foraging, sheltering, and roosting habitat of wintering populations
[3] NL = not listed
[4] identified as "sea turtles" by USDOI in Nov. 13, 2013 comment letter, see discussion preceding this table
[5] occurrence in Cameron Parish described as "possible" by USFWS

**A. American Alligator.** Alligators have been shown to be an important part of their ecosystem, and are thus regarded by many as a "keystone" species, a status that encompasses many functions from control of prey species to the creation of peat through their nesting activities (University of Florida, 1998). Populations of the American alligator were severely affected in the early parts of this century, due to hunting of the animal for its skin. In 1967, this species was listed as an endangered species, and hunting was prohibited. As a result, the alligator has undergone a successful recovery. Alligator hunting is allowed again; however, an alligator hunter must possess alligator CITES tags to harvest alligators. These tags are issued by the LDWF on property containing sufficient alligator habitat capable of sustaining an alligator harvest. Alligator hunters apply for alligator tags prior to the season.

The alligator is classified by USFWS as "Similarity of Appearance to a Threatened Taxon." The species to which it is similar is the American crocodile (*Crocodylus acutus)*, an endangered species. The alligator can be distinguished from the crocodile by its head shape and color. The crocodile has a narrower snout, and unlike the alligator, has teeth in the lower jaw that are visible even when its mouth is shut. In the United States, the American crocodile is found only in southern peninsular Florida. Because of its similarity to the crocodile, the USFWS regulates the legal trade in alligator skins, or products made from them, to protect the crocodile, whose skin is similar in appearance, but illegal in the commercial market.

**B. Green Sea Turtle.** The threatened green sea turtle is one of seven species of sea turtles found throughout the world. An adult green sea turtle carapace (top of shell) can measure more than 3 feet (1 meter) in straight carapace length, and weigh 220 pounds (100 kilograms). This species has a smooth carapace with four pairs of lateral scutes (plates), a single pair of prefrontal scales, and a lower jaw-edge that is coarsely serrated, corresponding to strong grooves and ridges on the inner surface of the upper jaw. The term "green" applies not to the external coloration, but to the color of the turtle's subdermal fat.

Green sea turtles have a circumglobal distribution in tropical and sub-tropical waters. In the United States, this species occurs in the Atlantic Ocean around the Virgin Islands, Puerto Rico, and along the Atlantic and Gulf coasts of the continental United States from Massachusetts to Texas (NOAA Fisheries/FWS, 1991). Green sea turtles utilize shallow estuarine habitats and other areas with an abundance of marine algae and sea grasses, their principal food sources. Terrestrial habitats are limited to nesting sites, which are typically located on high-energy beaches with deep sand and little organic content. Nesting within the project area is highly unlikely, as green sea turtles prefer to nest on high-energy beaches with deep sand and little organic content. Further, the Minerals Management Service (MMS) (1997) indicates that reports of green sea turtle nesting in the northern Gulf are "isolated and infrequent."

Based on NOAA's Sea Turtle Stranding and Salvage Network (http://www.sefsc.noaa.gov/STSSN/STSSNReportDriver.jsp), green sea turtles have been found stranded infrequently in Cameron Parish of southwestern Louisiana. For the period 1998-2013, three occurrences of green sea turtle strandings have been reported (year and number of individuals in parentheses): 2003 (1), 2004 (1), 2013 (1). Records from 1998-2008 do not indicate whether strandings were offshore (along an ocean beach) or inshore (in a bay, river, sound, or inlet). The 2013 stranding was noted as offshore. No strandings have been recorded for Calcasieu Parish to the north, which would indicate an inshore stranding.

**C. Gulf Sturgeon.** The Gulf sturgeon (*Acipenser oxyrhynchus desotoi*), federally listed as a threatened species, is an anadromous fish that occurs in many rivers, streams, and estuarine waters along the northern Gulf coast between the Mississippi River and the Suwannee River, Florida. Spawning occurs in coastal rivers between late winter and early spring (i.e., March to May). Adults and sub-adults may be found in those rivers and streams until November and in estuarine or marine waters during the remainder of the year. Sturgeon less than 2 years old appear to remain in riverine habitats and estuarine areas throughout the year, rather than migrate to marine waters. Habitat alterations such as those caused by water control structures that limit and prevent spawning, poor water quality, and over-fishing have negatively affected this species.

Based on distribution information from the NOAA Fisheries (2007), the present range of the Gulf sturgeon extends from Lake Pontchartrain and the Pearl River system in eastern Louisiana and western Mississippi east to the Suwannee River is Florida. The project area is not within the current range of the Gulf sturgeon.

**D. Hawksbill Sea Turtle.** The endangered Hawksbill Sea Turtle is one of seven species of sea turtles found throughout the world. One of the smaller sea turtles, it has overlapping scutes (plates) that are thicker than those of other sea turtles. This protects them from being battered against sharp coral and rocks during storm events. Adults range in size from 30 to 36 inches (0.8-1.0 meters) carapace length, and weigh 100 to 200 pounds (45-90 kilograms). Its carapace (upper shell) is an attractive dark brown with faint yellow streaks and blotches and a yellow plastron (under shell). The name "hawksbill" refers to the turtle's prominent hooked beak.

The hawksbill sea turtle is one of the most infrequently encountered sea turtles in offshore Louisiana. However, a hawksbill was reported offshore near Calcasieu Lake in 1986 (Fuller *et al*., 1987). Hawksbills generally inhabit coastal reefs, bays, rocky areas, passes, estuaries, and lagoons, where they are found at depths of less than 70 feet. Nesting occurs on undisturbed, deep-sand beaches, from high-energy ocean beaches to tiny pocket beaches several meters wide bounded by crevices of cliff walls; these beaches are typically low-energy, with woody vegetation near the waterline. In the continental United States, nesting sites are restricted to Florida where nesting is sporadic at best (NOAA Fisheries/USFWS, 1993). Due to the lack of suitable foraging and nesting habitats, there is a low probability of this species occurring within the project area.

Based on NOAA's Sea Turtle Stranding and Salvage Network, hawksbill sea turtles have been found stranded infrequently in Cameron Parish, Louisiana. For the period 1998-2013, two occurrences of hawksbill sea turtle strandings have been reported (year and number of individuals in parentheses): 1999 (1), 2002 (1). Records from 1998-2008 do not indicate whether strandings were offshore (along an ocean beach) or inshore (in a bay, river, sound, or inlet). No strandings have been recorded for Calcasieu Parish to the north, which would indicate an inshore stranding.

**E. Kemp's Ridley Sea Turtle.** The Kemp's ridley sea turtle is the smallest of all living sea turtles. Adult and juvenile Kemp's ridleys are primarily restricted to the Gulf of Mexico, although juveniles have been recorded from throughout the Atlantic Ocean. Nesting occurs from April through July and is essentially limited to an 11-mile stretch of coastline near Rancho Nuevo, Tamaulipas, Mexico. The estuarine and offshore waters of Louisiana are considered important foraging areas. Adults are primarily shallow-water benthic feeders that specialize on portunid crabs. Other food items include shrimp, snails, bivalves, sea urchins, jellyfish, sea stars, fish, and occasionally marine plants. Juveniles typically feed on *Sargassum* spp. and associated infauna. During the non-breeding season, Kemp's ridley sea turtles prefer warm bays, shallow coastal waters, tidal rivers, estuaries, and seagrass beds with substrates of sand and mud. Juvenile Kemp's ridleys are generally found in Louisiana's coastal waters from May through October, whereas adults are common during the spring and summer near the mouth of the Mississippi River. In the winter, Kemp's ridleys typically move offshore to deeper, warmer waters, but some of the deepwater channels and estuaries in Louisiana might provide important thermal refuge.

Based on NOAA's Sea Turtle Stranding and Salvage Network, Kemp's Ridley sea turtles have been found stranded relatively frequently in Cameron Parish, Louisiana. For the period 1998-2013, a total

of 538 Kemp's Ridley sea turtle strandings have been reported, for an average of about 34 per year. Three of these strandings (2008, 2009, 2012) were noted as inshore (in a bay, river, sound, or inlet). Three inshore strandings have also been recorded for Calcasieu Parish (1987, 1994, 2001), indicating that this species is occasionally found in Calcasieu Lake, and as far north as the north shore of the lake. No Kemp's ridley sea turtle nesting habitat occurs near the project site (i.e., sandy beaches), and nesting has not been known to occur in the area.

**F. Leatherback Sea Turtle.** The leatherback is the largest, deepest diving, and most migratory and wide ranging of all sea turtles. The adult leatherback can reach 4 to 8 feet in length and 500 to 2000 pounds in weight. Its shell is composed of a mosaic of small bones covered by firm, rubbery skin with seven longitudinal ridges or keels. The skin is predominantly black with varying degrees of pale spotting; including a notable pink spot on the dorsal surface of the head in adults. A tooth-like cusp is located on each side of the gray upper jaw; the lower jaw is hooked anteriorly. The paddle-like clawless limbs are black with white margins and pale spotting.

Leatherbacks are mainly pelagic, inhabiting the open ocean and seldom entering coastal waters except for nesting purposes. This species has been reported as occurring in shallow coastal waters but not usually near shore (Lee and Socci, 1989). A 1987 aerial survey of shallow Gulf of Mexico waters found that leatherback sea turtles occurred with the highest frequency in offshore Louisiana in October (NOAA Fisheries/USFWS, 1992). The leatherback typically nests on beaches with a deepwater approach. Major nesting beaches include Malaysia, Mexico, French Guiana, Surinam, Costa Rica, and Trinidad. In the continental United States, leatherbacks nest only sporadically in some of the Atlantic and Gulf states; the largest U.S. nesting assemblages are found in the U.S. Virgin Islands, Puerto Rico, and Florida.

Based on NOAA's Sea Turtle Stranding and Salvage Network, leatherback sea turtles have been found stranded infrequently in Cameron Parish, Louisiana. For the period 1998-2006, 16 occurrences of green sea turtle strandings have been reported (year and number of individuals in parentheses): 1998 (1), 1999 (1), 2000 (4), 2001 (1), 2002 (6), 2005 (1), 2006 (2). Records from 1998-2008 do not indicate whether strandings were offshore (along an ocean beach) or inshore (in a bay, river, sound, or inlet). No strandings have been recorded in Cameron Parish more recently (2008-2013), and no strandings have been recorded for Calcasieu Parish to the north, which would indicate an inshore stranding.

**G. Loggerhead Sea Turtle.** Loggerheads were named for their relatively large heads, which support powerful jaws and enable them to feed on hard-shelled prey, such as whelks and conch. The carapace (top shell) is slightly heart-shaped and reddish-brown in adults and sub-adults, while the plastron (bottom shell) is generally a pale yellowish color. The neck and flippers are usually dull brown to reddish brown on top and medium to pale yellow on the sides and bottom. Mean straight carapace length of adults in the southeastern U.S. is approximately 36 in (92 cm); corresponding weight is about 250 lbs (113 kg).

Federally listed as a threatened species, loggerhead sea turtles nest within the coastal United States from Louisiana to Virginia, with major nesting concentrations occurring on the coastal islands of North Carolina, South Carolina, and Georgia, and on the Atlantic and Gulf coasts of Florida. In Louisiana, nesting is limited almost exclusively to the Chandeleur Islands, which are over 250 miles east of the project area. The loggerhead's diet includes molluscs, shrimp, crabs, sponges, jellyfish,

squid, sea urchins, and basket stars (Caldwell et al. 1955, Hendrickson 1980). Landry (1986) suggested that they may also feed on the by-catch from shrimp trawling. Adult loggerheads feed in waters less than 50 meters in depth, while the primary foraging areas for juveniles appear to be estuaries and bays (Rabalais and Rabalais 1980).

Based on NOAA's Sea Turtle Stranding and Salvage Network, loggerhead sea turtles have been found stranded frequently in Cameron Parish, Louisiana. For the period 1998-2013, a total of 65 loggerhead sea turtle strandings have been reported, for an average of about 4 per year. The 1998-2006 records do not indicate whether strandings were offshore (along an ocean beach) or inshore (in a bay, river, sound, or inlet). After 2007 there are no reported inshore strandings in Cameron Parish, and no strandings have been recorded for Calcasieu Parish to the north, which would indicate an inshore stranding.

The Corps has developed procedures to ensure that any sea turtles sighted in areas of construction and/or maintenance operations are protected. These procedures are appended.

**H. Piping Plover.** Federally listed as a threatened species, piping plovers are small shorebirds approximately seven inches long with sand-colored plumage on their backs and crown and white underparts. Piping plovers winter in Louisiana, and may be present eight to ten months. They depart for the wintering grounds from mid-July through late October and remain until late March or April. Piping plovers feed extensively on intertidal beaches, mudflats, sandflats, algal flats, and wash-over passes with no or very sparse emergent vegetation. In most areas, wintering piping plovers are dependent on a mosaic of sites distributed throughout the landscape, because the suitability of a particular site for foraging or roosting is dependent on local weather and tidal conditions. Plovers move among sites as environmental conditions change.

On July 10, 2001, the USFWS designated critical habitat for wintering piping plovers (Federal Register Volume 66, No. 132). Their designated critical habitat identifies specific areas that are essential to the conservation of the species. The primary constituent elements for piping plover wintering habitat are those habitat components that support foraging, roosting, and sheltering and the physical features necessary for maintaining the natural processes that support those habitat components. Constituent elements are found in geologically dynamic coastal areas that contain intertidal beaches and flats (between annual low tide and annual high tide), and associated dune systems and flats above annual high tide. Important components (or primary constituent elements) of intertidal flats include sand and/or mud flats with no or very sparse emergent vegetation. Adjacent unvegetated or sparsely vegetated sand, mud, or algal flats above high tide are also important, especially for roosting plovers. Small sand dunes, debris, and sparse vegetation within adjacent beaches provide shelter from wind and extreme temperatures. Major threats to this species include the loss and degradation of habitat due to development, disturbance by humans and pets, and predation. There is no critical habitat located within the project area.

**I. West Indian Manatee.** The average body length of an adult West Indian manatee is approximately three meters but some individuals can reach a length of 4.5 meters including the tail. The average weight of these manatees ranges between 200 and 600 kg, however the largest individuals can weigh up to 1,500 kg. Manatees are somewhat seal shaped with forelimbs (flippers) adapted for a completely aquatic life and no hind limbs. Lungs extend the length of the animal's body, which is important in controlling position in the water column. Hair is distributed sparsely over the body and

the surface layer of skin is continually sloughing off. This is believed to reduce the build-up of algae on their skin. Manatees will consume any aquatic vegetation (i.e., submerged, floating, and emergent) available to them and sometimes even shoreline vegetation. Although primarily herbivorous, they will occasionally feed on fish.

The manatee has declined in numbers due to collisions with boats and barges, entrapment in flood control structures, poaching, habitat loss, and pollution. Cold weather and outbreaks of red tide may also adversely affect these animals.

Federally listed as an endangered species, West Indian manatees in Louisiana occasionally enter Lakes Pontchartrain and Maurepas, and associated coastal waters and streams during the summer months (*i.e.*, June through September). Manatees have been regularly reported in the Amite, Blind, Tchefuncte, and Tickfaw Rivers, and in canals within the adjacent coastal marshes of Louisiana. Louisiana records of occurrence along the Gulf coast and inland waters most often consist of sightings of single individuals, and for southwestern Louisiana they are scattered (Fertl et al, 2005). The manatee is a rare visitor to the Calcasieu Basin. A carcass was found in 1929 along the shore of Calcasieu Lake in Cameron Parish at McFaddens Beach (Fertl et al., 2005); this location is at the south end of the lake about 15 miles from the project area. More recently the manatee has been sighted twice in the Calcasieu River at Lake Charles, northward of the project area. According to Fertl et al. (2005), it was observed in November 1999 in the west fork of Calcasieu River and the Calcasieu River, and in August 2001 in the Calcasieu River, about one mile east of the I-210 bridge. These two locations are about 14 miles and 9 miles to the north of the project area by straight line, respectively. Sightings such as these probably represent seasonal migrants from Florida (Fertl et al, 2005).

The USFWS has developed procedures to ensure that any manatees sighted in areas of construction and/or maintenance operations are protected. These procedures are appended.

**J. Sprague's pipit.** Calcasieu Parish is known to be used by the Sprague's pipit (*Anthus spragueii*), a candidate species for Federal listing as a threatened or endangered species. Candidate species are those taxa for which the Service has on file sufficient information regarding biological vulnerability and threat(s) to support issuance of a proposal to list, but issuance of a proposed rule is currently precluded by higher priority listing actions. Sprague's pipit is a small (4 to 6 inches in length) passerine bird with a plain buffy face, a large eye-ring, and buff and blackish streaking on the crown, nape, and under parts. It winters in Louisiana, arriving from its northern breeding grounds in September and remaining until April. Migration and wintering ecology of this species is poorly known, but Sprague's pipit exhibits a strong preference for open grassland (i.e., native prairie) with native grasses of intermediate height and thickness, and it avoids areas with too much shrub encroachment. Its use of an area is dependent upon habitat conditions. This species is a ground feeder and forages mainly on insects but will occasionally eat seeds.

## V. DESCRIPTION OF RECOMMENDED PLAN

**Alternative 1 (Recommended Plan).** The Recommended Plan provides for the movement of flows from drainage events out of the Mermentau Basin consistent with the authorized purpose of the project. The project features are as follows:

**Dredging.** A new channel will to carry freshwater flows from the Mermentau Basin around the south side of the existing Calcasieu Lock to Bayou Choupique. This channel, constructed by hydraulic cutterhead dredging, would be about 3,650 feet long and 200 feet wide at the top. The channel would be dredged to -12 NAVD 88, with a channel bottom width of 120 feet, and 1V on 3H side slopes. The channel will transition to -6.0 NAVD 88, with a channel bottom width of 150 feet at the structure. The transition will occur over 600 ft east and west of the structure at a 1V on 100H slope. Approximately 215,000 cy of dredged material would be generated from construction of the channel. Dredged material would be placed within the project area in areas of open water totaling about 50 acres. Placement of dredged material into these disposal sites is intended to convert open water to estuarine marsh. For disposal of dredged materials, a pipeline will be routed through the existing open water using floating and/or submerged pipeline.

**Culvert Structure.** A gated water control structure would be constructed inside the channel to control the passage of freshwater flows. The culvert structure consists of seven openings (9' x 14' each) that will allow for the passage of the additional flow. The structure is a pile-founded reinforced concrete box culvert with stainless steel sluice gates. The sluice gates will remain in the open position to drain the Mermentau Basin and can be closed when salinity levels in the Ship Channel exceed the allowable limits. The structure foundation consists of 50-ft long pre-stressed concrete piles. The structure is 114-feet wide and 110-feet long. The invert of the structure is (-)6.0, with the top of the culvert structure at (+)5.0. The top of the gate tower is at (+)14.0 NAVD88. The top of the culvert is higher than the anticipated flow line thru the area, so water cannot overtop the structure. The structure is placed in an area along the by-pass channel where the natural ground is above elevation (+)4.0 NAVD88, so water cannot flank the structure during drainage events. Trash screens will be provided to prevent large debris from clogging the culverts, which can prevent the gates from fully closing.

Riprap will be placed 200-feet on either side of the structure, only on the side slopes of the inflow and outflow channels. 50-feet of riprap will be placed on either side of the structure, along the channel bottom.

Steel bulkheads (stoplogs) will be provided so the structure can be dewatered for maintenance purposes. The bulkheads can be placed on either side of the gate tower to isolate the area from the rest of the structure.

The sluice gates have electric motors that will be operated either locally at the structure, or remotely at the Calcasieu Lock. Closed-circuit cameras will be provided at the structure for lock personal to inspect the gate operations. Therefore, there is no requirement to man the structure during events in which the structure is opened.

Timber pile clusters will be constructed where the by-pass channel intercepts the GIWW and Bayou Choupique. The clusters are provided to prevent barge access into the by-pass channel.

**Dredged Material Placement for Marsh Creation/Restoration.** As described above under Dredging, dredged material obtained from construction of the new channel will be placed within the project area in several areas of open water totaling about 50 acres. This dredged material will be used to restore degraded brackish marsh and create brackish marsh from shallow open water. These disposal sites are least-cost, environmentally acceptable placement alternatives that will contribute to a sustainable environment while providing placement capacity for the dredged material. Benefits from

the approximately 50 acres of dredged material placement will more than offset the unavoidable direct impact to about 14 acres of brackish marsh from construction of the new channel (table A-2). Therefore, no compensatory mitigation is proposed for Recommended Plan effects to brackish marsh. Monitoring and adaptive management of dredged material placement sites are included as part of the Recommended Plan, and will be conducted to ensure that brackish marsh benefits offset losses.

These features would consist of placement of about 233,000 cys of dredged material (including an estimated 1 ft of overdepth) into three disposal locations adjacent to the new channel and south of Black Bayou. The assumed existing elevation for the disposal locations is -1.5 to -2.0 NAVD 88, with an initial slurry elevation of +3.5 NAVD88 to achieve a final target elevation of +1.5 NAVD 88. To contain dredged material at these locations, earthen closures and weirs would be constructed around all disposal sites. All borrow material needed for closures and weirs would come from within the disposal sites. About 7,300 LF of earthen closures (7.5 cy/lf) would be constructed to elevation +5.0 NAVD 88, with a 5-foot crown, and 1V on 4H side slopes. About 16,500 LF of earthen weir containment (3.8 cy/lf) would be built along the existing marsh to elevation +3.0 NAVD 88, with a 5-foot crown, and 1V on 4H side slopes.

**Compensatory Mitigation.** A compensatory mitigation plan for project impacts has been developed to offset unavoidable losses from construction of the new channel to 11.5 acres of forested spoil bank habitat (table A-2) and is included as part of the Recommended Plan. The recommended mitigation plan would compensate for the Recommended Plan's losses in forest biological function by implementing tree stand improvements in about 15 acres of remaining forested habitat, plus the purchase of 9 acres of credits from an approved bottomland hardwood mitigation bank serving the project area. The amount of recommended mitigation was determined by the Coastal Chenier/Ridge WVA model and is the amount of forest that would need to be enhanced and restored to compensate for the mitigation target of 7 AAHUs. Monitoring and adaptive management of the on-site mitigation area are included as part of the Recommended Plan, and will be conducted to ensure that forest benefits are realized.

A detailed description of the recommended mitigation plan is presented in Appendix I, *Mitigation Plan.*

**Access/Staging**. A 10-ft wide access road will be constructed from the Lock to the culvert structure for use by the Lock personnel. An access area and staging area will be established during construction in the vicinity of the access road.

The project is anticipated to occur during 2016-2017, with project completion by 2018. It is presumed that once construction has commenced, work would occur throughout the year, and not on a seasonal basis, to the extent practicable.

**Table A-2.** Impacts to Habitat Shown in Acres

| | | Marsh | | | | | |
|---|---|---|---|---|---|---|---|
| | | Brackish | | Intermediate | | | |
| **Alternative 1 (New Channel With Gate)** | **Forested Spoil Bank** | **Emergent** | **Open Water** | **Emergent** | **Open Water** | **Marsh Total** | **Total Habitat Impacts** |
| Acres | 11.5 | 9.7 | 4.3 | 0 | 0 | 14.0 | 25.5 |

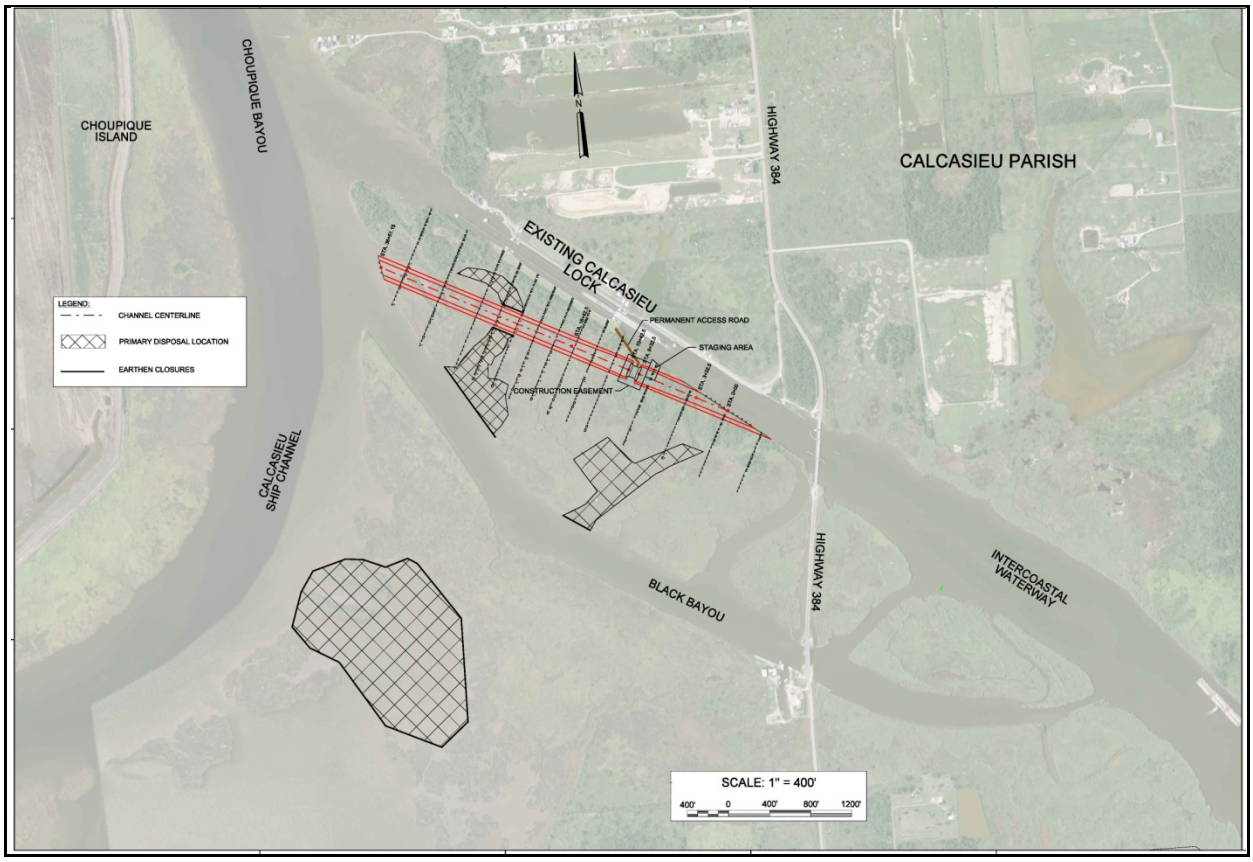


**Figure A-3.** General Plan for Alternative 1 (Recommended Plan)

Because of the potential for protected marine species such as sea turtles and manatees to become entrapped within construction sites in coastal Louisiana waters, projects that utilize shallow open water areas for the construction of enclosed facilities and wetland creation, such as this one, will utilize measures to minimize and/or prevent the potential for such entrapment. These measures are found as an addendum to this document. Similarly, procedures have been recommended by the USFWS for use in situations where in-water construction activities potentially could occur where manatees may be present. These procedures are also appended. These two sets of procedures will be included as part of the Recommended Plan.

## VI. EFFECTS ASSESSMENT FOR INDIVIDUAL SPECIES

The Recommended Plan was evaluated and the anticipated effects of the action determined in accordance with the ESA. The potential impacts identified with respect to the listed species and the Recommended Plan are as follows.

**A. Sea Turtles.** Sea turtles are unlikely to be year-round residents of the project area, although some individuals may be present at any given time. The period of greatest sea turtle activity in southwest coastal Louisiana is spring and summer. With regard to direct impacts, potential impacts

include entrainment in hopper dredge equipment, collisions between equipment or transport vessels and marine turtles, and reductions in water quality or clarity due to project-induced increases in turbidity. Potential indirect impacts include disturbance of underwater resting habitats, benthic foraging habitats, and disruption of the food or prey base. Sea turtles feed on benthic invertebrates, fish, crabs, jellyfish, sponges, and sea grasses.

Excavation of the new channel will be accomplished using a hydraulic cutterhead dredge. In contrast to hopper dredges, sea turtles are typically able to avoid cutterhead dredge intakes because the dredges move along the seabed at such a slow speed (NMFS, 2007). The project's dredge site is brackish marsh (emergent and shallow open water) and a forested spoilbank located adjacent to Calcasieu Lock. Therefore, cutterhead dredging is not expected to adversely impact sea turtles. Similarly, any dredging associated with creation of containment dikes to be constructed around the dredge disposal areas is not expected to adversely affect sea turtles. It is the Corps' determination that the hydraulic cutterhead dredging operations will have "*no effect*" on sea turtles that potentially could be in the project area.

Regarding potential increases in turbidity, the project also includes placement of hydraulically dredged material into nearby beneficial use disposal sites totaling about 50 acres. By using containment dikes to confine dredged material, turbidity impacts will be minimal. Regarding potential collisions of vessels with turtles, the project is not expected to increase overall vessel traffic through the lock, but rather reduce navigation delays associated with the drainage of Mermentau Basin freshwater flows past the lock. Additional potential impacts associated with the placement of dredged material into beneficial use sites are discussed below for each species of threatened/endangered sea turtle that could potentially occur in the project area.

**A.1. Green Sea Turtle.** Sea grasses, which are this species main food source, are lacking in Calcasieu Lake (USACE, 2010), and little to no submerged aquatic vegetation occurs within the project's disposal sites, which include degraded marsh and shallow open water. Given the lack of feeding habitat in the project area and the low incidence of sightings and strandings in southwestern Louisiana, it is the Corps' determination that the project will have "*no effect*" on the green sea turtle.

**A.2. Hawksbill Sea Turtle.** It is the Corps' determination that the project, including the placement of dredged material, will have "*no effect*" on the hawksbill sea turtle due to its rarity along the southwestern Louisiana coast and lack of suitable foraging and nesting habitats within the project area.

**A.3. Kemp's Ridley Sea Turtle.** Kemp's ridleys are known to occur in Calcasieu Lake. As this species is considered primarily a carnivorous benthic feeder, the project's 50 acres of brackish marsh restoration and creation will more than offset the loss of about 14 acres of marsh, and production of prey species such as shrimp and blue crabs would resume. Sea turtles are highly mobile and capable of moving to better forage areas until the affected area becomes recolonized by benthic organisms. With the inclusion of protected marine species entrapment prevention measures as part of the project, it is the Corps' determination that the project will have "*no effect*" on the Kemp's ridley sea turtle.

**A.4. Leatherback Sea Turtle.** Due to this species pelagic behavior (typically occupies oceanic waters of more than 160 feet (50 m) in depth) and rarity along the southwestern coast of

Louisiana, it is the Corps' determination that placement of dredge material into the disposal sites is expected to have "*no effect*" on the Leatherback sea turtle.

**A.5. Loggerhead Sea Turtle.** Whereas nesting loggerhead sea turtles have historically used barrier islands, it is doubtful that they nest anywhere on the Louisiana coast. Similarly, because strandings of Loggerhead sea turtles in southwestern Louisiana appear to be limited to offshore (along an ocean beach) and not inshore (in a bay, river, sound, or inlet) areas, it is unlikely they occur in Calcasieu Lake. Therefore, it is the Corps' determination that the project is expected to have "*no effect*" on the Loggerhead sea turtle.

**B. Gulf Sturgeon.** This fish is not known to be present in Calcasieu Parish (table A-1) or from the Calcasieu Basin, and is therefore not likely to be found in the vicinity of the project area. The project is expected to have "*no effect*" on the gulf sturgeon.

**C. Piping Plover.** This bird is not known to occur in Calcasieu Parish and therefore not likely to be found in the vicinity of the project area (table A-1). Critical habitat in Louisiana encompasses 24,950 acres along 342.5 miles of shoreline, which is most of the coast of Louisiana. The coastline is about 20 miles south of the project area. The project is expected to have "*no effect*" on the piping plover, and "*no effect*" on this species' designated critical habitat.

**D. West Indian Manatee.** Aquatic vegetation, which is this species main food source, is lacking in Calcasieu Lake (USACE, 2010), and little to no submerged and floating aquatic vegetation occurs within the project area. Given the lack of feeding habitat in the project area and the low incidence of sightings in the Calcasieu Basin, and with the inclusion of protected marine species entrapment prevention measures and the manatee protection measures as part of the project, it is the Corps' determination that the project "*may affect, but will not likely adversely affect*" the manatee.

**E. Sprague's Pipit.** The Sprague's pipit (*Anthus spragueii*), a candidate species for Federal listing as a threatened or endangered species, is the only species listed for Calcasieu Parish. Because the project area does not support grassland (either natural or managed), and because habitats to be impacted by the project (forested spoil bank and brackish marsh) are not known to be used by Sprague's pipit, the project "*may affect, but will not likely adversely affect*" the Sprague's pipit.

## VII. SUMMARY OF EFFECTS OF THE RECOMMENDED PLAN

The effects of the project are summarized in table A-3.

**Table A-3.** Summary of Potential Impacts on Federally-listed Species

| Species | Federal | State | Impact |
|---|---|---|---|
| American Alligator | T; [1] | Not listed | No effect |
| Green sea turtle | T | T | No effect |
| Gulf Sturgeon | T | T | No effect |
| Hawksbill sea turtle | E | E | No effect |
| Kemp's Ridley sea turtle | E | E | No effect |
| Leatherback sea turtle | E | E | No effect |
| Loggerhead sea turtle (*Caretta caretta)* | T | T | No effect |
| Piping Plover | T; | T/E | No effect |
| West Indian Manatee | E | E | May affect, but not likely |
| Sprague's pipit | C | Not listed | May affect, but not likely |

[1] S/A = similarity of appearance

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## ADDENDUM

### Protected Marine Species Entrapment Prevention Measures

Bottlenose dolphins, sea turtles, manatees and Gulf sturgeon (NOAA Trust Species) are known to inhabit coastal Louisiana waters. Bottlenose dolphins and manatees are protected under the Marine Mammal Protection Act of 1972 (MMPA) and sea turtles, manatees and Gulf sturgeons are protected under the Endangered Species Act (ESA). Because of the potential for these protected species to become entrapped within construction sites in coastal Louisiana waters, projects that utilize shallow open water areas for the construction of enclosed facilities and wetland creation will utilize the following measures to minimize and/or prevent the potential for such entrapment:

1. Prior to construction, the Corps of Engineers (COE) Technical Manager, the Contracting Officer Representative (COR) and the Contractors should conduct a site visit and meeting to develop a mutual understanding relative to compliance with the MMPA and the ESA.

2. Contractors will instruct all personnel associated with the project of the potential presence of Trust Species in the area, and the need to prevent entrapment of these animals. All construction personnel will be advised that there are civil and criminal penalties for harming, harassing, or killing these protected species. The Contractor shall be held responsible for any Trust species harassed or killed as a result of construction activities not conducted in accordance with these specifications.

3. Contractor will observe the area to be enclosed for Trust Species at least 24 hours prior to and during closure of any levee, dike or structure. This is best accomplished by small vessel or aerial surveys, with at least two experienced marine observers on board scanning for Trust species. Large areas (e.g. >300 acres) will likely require the use of more than one vessel or aerial surveys to insure full coverage of the area. These surveys will occur in a best sea state (BSS) of 3 feet or less, as Trust species are difficult to sight in choppy water.

4. Any Trust Species sighted within the area to be enclosed triggers all appropriate precautions to be implemented by the Contractor to ensure protection of the animal(s). These precautions shall include avoiding direct contact with the Trust species.

5. Any sightings of Trust Species within an enclosed project site shall be reported immediately to the COE. The point of contact within the COE will be the Chief of the Environmental Planning Branch, (504) 862-1760. Coordination by the COE personnel with the National Marine Fisheries Service (NMFS) Marine Mammal Health and Stranding Response (MMHSRP) and the Louisiana State Coordinator for the Sea Turtle Stranding and Salvage Network (STSSN) will be conducted, as applicable, to determine what further actions may be required.

6. During enclosure construction, the Contractor will leave or construct at least one escape route in retention structures to allow any Trust species to exit shallow open water areas during construction activities. Escape routes in retention structures would be constructed to lead directly to open water outside the disposal site with a minimum width of 100 feet and have a depth as deep as the deepest natural entrance into the disposal site.

7. Escape routes in retention structures would remain open until visual inspections of the enclosure have determined that no Trust species are present within the structure.

8. If observers note entrapped animals are not leaving the area, but are visually disturbed, stressed, or their health is compromised then COE may require any pumping activity to cease until the animals either leave on their own or are moved under the direction of NMFS.

    a. In coordination with the local stranding networks and other experts, NMFS will conduct an initial assessment to determine the number of animals, their size, age (in the case of dolphins), body condition, behavior, habitat, environmental parameters, prey availability and overall risk.

    b. If the animal(s) is/are not in imminent danger they will need to be monitored by the Stranding Network for any significant changes in the above variable.

    c. The contractor may not attempt to scare, herd, disturb, or harass the Trust species to encourage them to leave the area. Coordination by the COE with the NMFS SER Stranding Coordinator may result in authorization for these actions.

    d. NMFS may intervene (catch and release and/or rehabilitate) if the Trust Species are in a situation that is life threatening and evidence suggests the animal is unlikely to survive in its immediate surroundings.

    e. Surveys will be conducted throughout the construction area at least twice more in calm surface conditions (BSS 3 feet or less), with experienced marine observers, to determine whether Trust species are no longer present during the period of construction.

9. Any Trust Species observed dead must immediately be reported to the COE (504-862-1760) who will then report to NMFS and/or STSSN coordinator.

## ADDENDUM

### Standard West Indian Manatee Protection Measures

The following procedures have been recommended by the USFWS for use in situations where in-water construction activities potentially could occur where manatees may be present.

All contract personnel associated with the project would be informed of the potential presence of manatees and the need to avoid collisions with manatees. All construction personnel would be responsible for observing water-related activities for the presence of manatees. Temporary signs would be posted prior to and during all construction or dredging activities to remind personnel to be observant for manatees during active construction/dredging operations or within vessel movement zones (i.e., the work area), and at least one sign would be placed where it is visible to the vessel operator. Siltation barriers, if used, will be made of material in which manatees could not become entangled and would be properly secured and monitored. lf a manatee is sighted within 100 yards of the active work zone, special operating conditions would be implemented, including: moving equipment would not operate within 50 ft of a manatee; all vessels would operate at no wake/idle speeds within 100 yards of the work area; and siltation barriers, if used, would be re-secured and monitored. Once the manatee has left the 100-yard buffer zone around the work area of its own accord, special operating conditions would no longer be necessary, but careful observations will be resumed. Any manatee sighting would be immediately reported to the U.S. Fish and Wildlife Service (337/291- 3100) and the LaDWF, LaNHP (225/765-2821).

# CALCASIEU LOCK LOUISIANA
# FEASIBILITY STUDY

## APPENDIX B

## USFWS COORDINATION LETTER AND SUPPORT

# United States Department of the Interior

FISH AND WILDLIFE SERVICE
646 Cajundome Blvd.
Suite 400
Lafayette, Louisiana 70506


August 22, 2013

Colonel Richard L. Hansen
District Commander
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Colonel Hansen:

Please reference the U.S. Army Corps of Engineers' Calcasieu Lock, Louisiana Feasibility Study to address proposed modifications to, and the possible replacement of, the Calcasieu Lock. The Fish and Wildlife Service, under provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) submits the enclosed supplemental draft Fish and Wildlife Service Coordination Act Report (FWCAR) containing a description of the existing fish and wildlife resources of the project area, discusses future with and without project habitat conditions, identifies fish and wildlife-related impacts of the proposed project, and provides recommendations to avoid, reduce, or compensate for impacts to fish and wildlife. This report supersedes our previous draft FWCAR and incorporates comments from the National Marine Fisheries Service. This draft report does not constitute the report of the Secretary of the Interior as required by Section 2(b) of the FWCA.

To help ensure that fish and wildlife conservation receives equal consideration with other project purposes, the Service recommends that the planning objectives and conservation measures identified in our report be integrated into the plan formulation process. We look forward to actively participating in the current phase of project planning. If your staff has any questions regarding our comments, please have them contact David Castellanos at (337) 291-3112.

Sincerely,

for

Jeffrey D. Weller
Field Supervisor
Louisiana Ecological Services Office

Enclosure

cc: Southwest Louisiana Refuge Complex, Bell City, LA
EPA, Dallas, TX
NMFS, Baton Rouge, LA
LDWF, Baton Rouge, LA
LDNR, CMD, Baton Rouge, LA
OCPR, Baton Rouge, LA

# Fish and Wildlife Coordination Act Report

## Gulf Intracoastal Waterway
## Calcasieu Lock Feasibility Study
## Calcasieu Parish, Louisiana

PROVIDED TO
NEW ORLEANS DISTRICT
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA

PREPARED BY
DAVID CASTELLANOS
FISH AND WILDLIFE BIOLOGIST

FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
LAFAYETTE, LOUISIANA

**AUGUST 2013**

FISH AND WILDLIFE SERVICE – SOUTHEAST REGION

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# INTRODUCTION

The U.S. Army Corps of Engineers (Corps), New Orleans District has initiated the Calcasieu Lock Feasibility Study to identify and address various alternatives to reduce navigation delays currently experienced with traversing the lock. This study is a supplement to the Intracoastal Waterway Locks, Louisiana Reconnaissance Report that focuses on the Calcasieu Lock (U.S. Corps of Engineers 1992). The present study was authorized by resolutions adopted by the Committees on Public Works of the United States Senate and the House of Representatives on September 29 and October 12, 1972, respectively. Navigation delays at Calcasieu Lock are primarily related to hydrologic conditions and how they affect the tonnage passing through the lock. The lock was constructed as a saltwater barrier; it is operated to keep salt water from moving west to east into the Mermentau Basin and to drain flood flows from east to west to the Calcasieu River. Delays can occur when there are excessive stages within the Mermentau Basin. During floods, the lock is frequently left open to drain water from the basin toward the Calcasieu River. During this situation, tows are forced to wait out the drainage event due to head differential and high velocities in the lock chamber. Altering the existing lock structure to decrease the impacts of drainage events on transiting tows would result in shorter transit times for tows staging at either segment of the GIWW (east or west). Fewer barge reconfigurations to allow for transit during drainage events will increase cycling times of tows through the lock. An additional or wider lock chamber would allow for passing of flows through the old lock or through a new wider lock that can accommodate drainage events and lockage's. Redirecting completely or partially drainage flows away from the existing lock would reduce or eliminate the delays that result. The Fish and Wildlife Service (Service) submits the following comments under provisions of the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.); this document does not constitute the report of the Secretary of the Interior as required by Section 2(b) of that Act. This draft report supplements and supersedes our August 2, 2013, draft FWCA Report that addressed potential impacts and mitigation features for the Calcasieu Lock Feasibility Study, and it incorporates comments received by the National Marine Fisheries Service (NMFS). This report has been provided to the Louisiana Department of Wildlife and Fisheries (LDWF) and the NMFS; their comments will be incorporated into our final report.

# DESCRIPTION OF STUDY AREA

The study area is located in the north-central portion of the Calcasieu Estuary, in south-central Calcasieu Parish, Louisiana (Figure 1). There is a relatively large expanse of wetlands and associated shallow open waters between the GIWW and Black Bayou, and to the west and southwest along Calcasieu Lake. Higher lands are associated with dredged disposal areas adjacent to the GIWW. Developed lands (residential, commercial, and agricultural) are located north of the GIWW, east and west of Louisiana Highway 384, and to the south near the community of Grand Lake. Navigation channels such as the GIWW and the Calcasieu River and Pass (CRP) are also prominent landscape features, as are extensive oil and gas industry access channels and pipeline canals.

Calcasieu Lock is one of the five major water control structures operated by the Corps that have a significant influence on water and salinity levels in the Mermentau Basin. It also serves as a hydrologic partition, separating the Mermentau Basin to the east from the Calcasieu-Sabine Basin to the west. Hydrologic connectivity between the two basins is intermittent and primarily occurs when the Calcasieu Lock is opened to evacuate excess water from the Mermentau Basin following significant rainfall events. Those two basins are described in detail below.

## Mermentau Basin

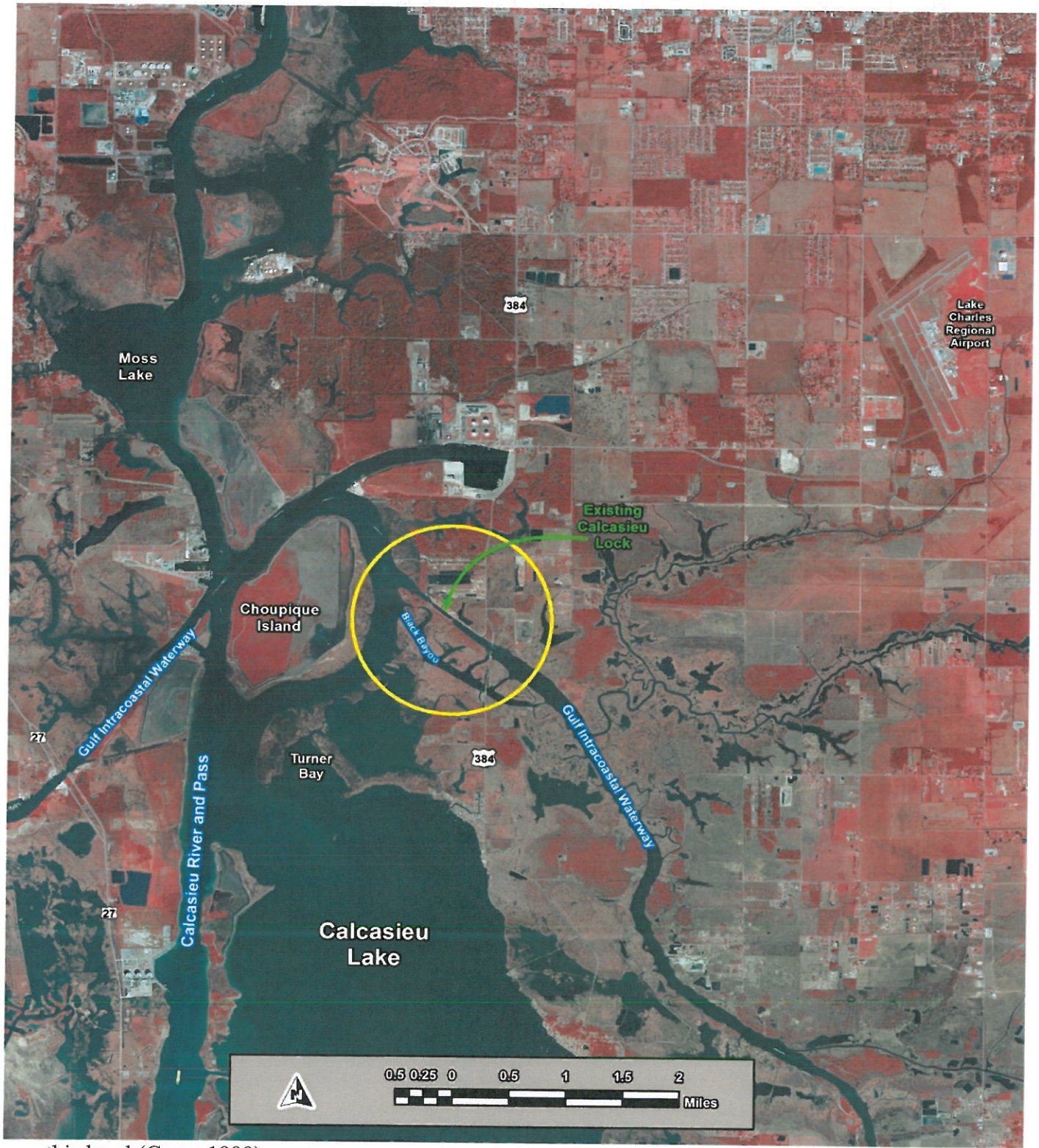
The Mermentau Basin extends from the vicinity of Louisiana Highway 10 between Oakdale and Ville Platte, in Allen and Evangeline Parishes, respectively, southward to the Gulf of Mexico. The Basin encompasses an area of about 4.2 million acres and contains productive agricultural lands and a variety of natural environments (Corps 1999).

The Mermentau Basin is divided into three sub-basins: Upland, Lakes, and Chenier. The latter two sub-basins which comprise the Lower Mermentau Basin would be most likely affected by hydrology changes resulting from the replacement of, and/or the operational changes to, the Calcasieu Lock. Most, if not all, of the Upland Sub-basin, however, lies beyond the immediate influence of the lock. The Upland Sub-basin covers an area of 3,683 $mi^2$ of predominantly agricultural land (Gammill et al. 2002). The principal agricultural products in this region are rice and crawfish which both require ample supplies of fresh water typically provided via the Corps' management of the Mermentau Basin Project (Corps 1999).

The Lakes Sub-basin, of the Lower Mermentau Basin, is located between the GIWW and Louisiana Highway 82 and historically functioned as a brackish estuary (Corps 2008). Construction of navigation channels, locks, and water control structures has altered the historical north-south river and tidal-driven hydrology and shifted it to an east-west system that drains through the GIWW navigation channel. Corps' locks and water control structures that are located along the perimeter of the Lakes Sub-basin regulate both salinity and water level. The result is that the Mermentau Lakes Sub-basin now functions more as a freshwater reservoir and less as the low-salinity estuary it was prior to these alterations (Gammill et al. 2002). The demand for a reliable fresh water supply for agricultural use was the primary reason for the development of the Mermentau Basin Project (Corps 1999).

The Mermentau Basin Project involves the operation and management of five navigation locks and control structures by the Corps to maintain the Mermentau Lakes Sub-basin as a freshwater reservoir for agricultural use and to reduce the detrimental effects of saltwater intrusion on freshwater habitats. Those five structures are: (1) the Calcasieu Lock located on the GIWW near the intersection of Louisiana Highway 384, (2) the Leland Bowman Lock situated on the GIWW near Intracoastal City, (3) the Freshwater Bayou Lock located on the Freshwater Bayou Canal approximately one mile from the Gulf of Mexico, (4) the Catfish Point Control Structure located on the southwest side of the basin where the Mermentau River exits Grand Lake, and (5) the Schooner Bayou Control Structure found on the east side of the basin in the old Intracoastal Waterway between Freshwater Bayou and White Lake. The target water level inside the basin

is 2.0 feet above mean low Gulf and the five Corps structures are operated in concert to maintain




this level (Corps 1999).

The Chenier Sub-basin is located south of the Lakes Sub-basin between Louisiana Highway 82 and the Gulf of Mexico. Approximately one-third of this Sub-basin is comprised of the State-owned and operated Rockefeller Wildlife Refuge. The Chenier Sub-basin is characterized by tidally influenced salt marshes, though hydrology throughout much of the area is managed through impoundments that range in size from hundreds to thousands of acres. The purpose of that management is to control salinity in order to reduce wetland losses and/or sustain recreational and agricultural endeavors (Corps 2008).

## Calcasieu-Sabine Basin

The Calcasieu-Sabine Basin lies immediately west of the Mermentau Basin and consists of two semi-distinct sub-basins, the Calcasieu River Basin and the Sabine River Basin. When the GIWW was built in the 1920s, it breached the Gum Cove Ridge which had historically formed a north-to-south oriented hydrologic barrier between the Calcasieu and Sabine Lake systems. That breach now facilitates the movement of salt water westward into the Sabine Basin, and has exacerbated saltwater intrusion problems in the marshes adjacent to the GIWW. The typical water-movement scenario is that south winds push salt water into Calcasieu Lake, westward through the GIWW, and across the Gum Cove Ridge breach. This water is eventually swept down the Sabine River and into Sabine Lake. Currently, salt water that is pushed into Calcasieu Lake remains there because there is little back flow from the Lake. Without the Gum Cove Ridge breach, the current semi-circular flow patterns would not exist, and lake levels would rise more modestly, thus reducing the volume of seawater entering Calcasieu Lake (Lopez et al. 2008).

The widening and deepening of the CRP channel, which included the removal of the channel mouth bar, has increased saltwater and tidal intrusion into the Calcasieu-Sabine Basin, resulting in marsh loss, tidal export of organic marsh substrate, and an overall shift to more saline habitats in the region. In 1968, the Corps completed construction of the Calcasieu River Saltwater Barrier on the Calcasieu River north of the City of Lake Charles. This barrier minimized the flow of salt water into the upper reaches of the Calcasieu River to protect agricultural water supplies (Gammill et al. 2002). The primary saltwater barrier between the Mermentau and Calcasieu Basins is the Corps-maintained Calcasieu Lock, located east of the CRP on the GIWW near its intersection with Louisiana Highway 384. It was designed to prevent saltwater intrusion into the Mermentau Basin. It is operated primarily for navigation and salinity control, but during flooding events the structure is often operated for drainage of the Mermentau Basin. There is a continual effort by the Corps to balance lock operation for flood control to local communities (i.e, Mermentau Basin drainage) with the needs of waterborne commerce (Gammill et al. 2002).

# FISH AND WILDLIFE RESOURCE CONDITIONS

## Existing Conditions

### Major Habitat Types

Fish and wildlife habitat of the proposed study area and vicinity consists of open water ponds lakes, and other waterways, relatively small tracts of forests and scrub-shrub habitat, and intermediate, brackish, and saline marsh. The three major lakes potentially influenced by proposed changes to the Calcasieu Lock are Calcasieu, Grand, and White Lakes (numerous smaller waterbodies could also be affected). Those lakes were formed as bays at the mouths of drowned Pleistocene entrenched river valleys during the Holocene rise in sea level, over the past 5,000 years (Fisk 1944). Marshes within this region of the State began forming about 3,000-4,000 years ago during periods when the Mississippi River followed a more westerly course (Gosselink et al.1979). Expansive mud flats were created by large quantities of riverine sediment that accreted along the Gulf shoreline. Despite substantial hydrologic alterations, wetlands within the project vicinity continue to support nationally significant fish and wildlife resources. They provide important habitat for various species of plants, fish, and wildlife, serve as ground water recharge areas, provide storage areas for storm and flood waters, serve as natural water filtration areas, provide protection from wave action, erosion, and storm damage, and provide various consumptive and non-consumptive recreational opportunities.

Most project-area wetlands west of Louisiana Highway 384, along the northern portion of Calcasieu Lake, have been classified as brackish marshes since 1968 (Chabreck and Linscombe 1968, 1978, 1988, 1997, 2001, and 2007). Most other marshes in the immediate project vicinity are classified as intermediate. The most prevalent habitat types and their associated fish and wildlife values are described below.

### Forested Lands

Forests in the vicinity of the proposed study area are primarily located on higher elevations adjacent to marsh and vegetated with Chinese tallow-tree, rough-leaf dogwood, sugarberry, various species of pine, wax myrtle, and deciduous holly. Those forests provide important "stopover" habitat (resting and feeding sites) for song birds that migrate across the Gulf of Mexico. They also provide habitat for other migratory and resident avian species including northern cardinal, northern mockingbird, American woodcock, wood thrush, Louisiana waterthrush, yellow-billed cuckoo, Carolina chickadee, red-tailed hawk, red-shouldered hawk, and barred owl).

Mammals associated with forested lands in the study area include game species (such as eastern cottontail, swamp rabbit, white-tailed deer, and gray and fox squirrel), commercially important furbearers (such as river otter and muskrat), and other mammal species (such as striped skunk, coyote, Virginia opossum, cotton rat, marsh rice rat, and white-footed mouse). Reptiles which utilize study-area forested habitats include the ground skink, five-lined skink, green anole, and western ribbon snake. Some of the amphibians expected to be found in study-area forested habitats include the small-mouthed salamander, green treefrog, bullfrog, and southern leopard frog.

**Scrub-Shrub**

Typical vegetation in scrub-shrub habitat includes big-leaf sumpweed, common reed, Chinese tallow-tree, eastern baccharis, marsh elder, black willow, wax myrtle and goldenrod. Scrub-shrub habitat occurs on canal spoil banks, abandoned agricultural areas, and drained wetlands. Those habitats often support a variety of wildlife, depending on local conditions; they provide nesting and feeding sites for wading birds, songbirds and other birds, and wildlife escape cover.

**Estuarine Marsh and Associated Open Water**

Study-area estuarine marshes extend westward from Louisiana Highway 384 toward the Calcasieu River and the northern portion of Calcasieu Lake. They are characterized by low to moderate daily tidal energy and by firm mineral to organic soils. Salinities vary, with peak salinities occurring in the late summer or fall. The lower-salinity estuarine marshes are often classified as intermediate; brackish to saline marshes occur at higher salinity levels. Estuarine marshes are predominantly vegetated with saltmeadow cordgrass, saltmarsh cordgrass, big cordgrass, Olney's bulrush, saltgrass, saltmarsh camphor-weed, seaside goldenrod, cow pea, common reed, marsh mallow, perennial saltmarsh aster, needle rush, and saltmarsh morning-glory. Brackish marsh ponds occasionally support extensive beds of widgeon-grass.

Estuarine marshes reduce erosion in adjacent non-wetland areas by dissipating wave and tidal energy. Such marshes also provide valuable wildlife habitat and important nursery and feeding habitat for estuarine-dependent fishes and shellfishes. Vegetative production rates in estuarine marshes are extremely high, providing an abundance of detritus to support the estuarine food web. The high primary productivity of Louisiana's coastal marshes is largely responsible for that area's role as the "fertile fisheries crescent" (Gunter 1967).

Estuarine marshes provide important habitat for the growth and production of estuarine-dependent species such as blue crab, white shrimp, brown shrimp, Gulf menhaden, Atlantic croaker, spot, red drum, black drum, sand seatrout, spotted seatrout, southern flounder, striped mullet, and other finfishes. Commercial shrimp harvests have been positively correlated with the area of tidal emergent wetlands (Turner 1977 and 1982). Future commercial harvests of shrimp and other fishes and shellfishes would likely be adversely impacted by continued losses in estuarine marsh habitat (Turner 1982).

Wildlife expected to utilize the study-area estuarine marshes include wading birds (herons, egrets, ibises, and roseate spoonbills), rails, migratory waterfowl (green-winged teal, blue-winged teal, mottled duck, gadwall, American widgeon, and lesser scaup), raptors, and songbirds. Brackish marshes having abundant submerged aquatic vegetation often support large numbers of puddle ducks. Shorebirds utilizing estuarine marshes include killdeer, American avocet, black-necked stilt, common snipe, and various other species; seabirds include white pelican, brown pelican, black skimmer, herring gull, laughing gull, and several species of terns. Other nongame birds such as boat-tailed grackle, red-winged blackbird, seaside sparrow, olivaceous cormorant, belted kingfisher, and sedge wren also utilize estuarine marshes.

Estuarine marsh wildlife also includes swamp rabbit, nutria, muskrat, mink, river otter, raccoon, white-tailed deer, and coyote. Reptiles are limited primarily to the American alligator in intermediate and brackish marshes, and the diamond-backed terrapin and gulf salt marsh snake in brackish and saline marshes. Juvenile sea turtles may seasonally utilize bays and saline marsh ponds in the lower Calcasieu Estuary.

## Essential Fish Habitat

The project is located within an area identified as Essential Fish Habitat (EFH) by the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA, Magnuson-Stevens Act; P.L. 104-297). The updated and revised 2006 generic amendment of the Fishery Management Plans for the Gulf of Mexico, prepared by the Gulf of Mexico Fishery Management Council, identifies EFH in the project area to be estuarine emergent wetlands, submerged aquatic vegetation, mud, and estuarine water column. Under the MSFCMA, wetlands and associated estuarine waters in the project area are identified as EFH for various federally managed species including: juvenile brown and white shrimp; eggs, larvae/postlarvae and larvae/postlarvae, juvenile, and adult red drum.

In addition to being designated as EFH for these species, water bodies and wetlands in the study area provide nursery and foraging habitats supportive of a variety of economically important marine fishery species, such as striped mullet, Atlantic croaker, gulf menhaden, spotted seatrout, sand seatrout, southern flounder, black drum, and blue crab. Some of these species also serve as prey for other fish species managed under the Magnuson-Stevens Act by the GMFMC (e.g., mackerels, snappers, and groupers) and highly migratory species managed by NMFS (e.g., billfishes and sharks) (NMFS 2008).

## Developed Lands

Developed areas are located on the higher elevations of the Pleistocene terrace north and south of the GIWW adjacent to the study area and are typically well drained. They include agricultural lands, and commercial and residential developments. Levees are also included in this category; they are frequently mowed, and, as such, provide poor wildlife habitat. Some levees are vegetated with an assortment of scrub/shrub species including marsh elder, eastern baccharis,

Chinese tallow-tree, common reed, and goldenrod. These higher-elevation areas may provide low-to-moderate-value habitat for terrestrial wildlife, including some migratory bird species.

**Federally Protected Species**

Federally listed as an endangered species, West Indian manatees (*Trichechus manatus*) have been occasionally observed along the Louisiana Gulf coast (primarily in southeast Louisiana). The manatee has declined in numbers due to collisions with boats and barges, entrapment in flood control structures, poaching, habitat loss, and pollution. Cold weather and outbreaks of red tide may also adversely affect these animals. Should the proposed project involve activity in aquatic environments during summer months, further consultation with this office will be necessary.

The proposed project area would be located in a Parish known to be used by the Sprague's pipit (*Anthus spragueii*), a candidate species for federal listing as a threatened or endangered species. Candidate species are those taxa for which the Service has on file sufficient information regarding biological vulnerability and threat(s) to support issuance of a proposal to list, but issuance of a proposed rule is currently precluded by higher priority listing actions. Sprague's pipit is a small (4 to 6 inches in length) passerine bird with a plain buffy face, a large eye-ring, and buff and blackish streaking on the crown, nape, and under parts. It winters in Louisiana, arriving from its northern breeding grounds in September and remaining until April. Migration and wintering ecology of this species is poorly known, but Sprague's pipit exhibits a strong preference for open grassland (i.e., native prairie) with native grasses of intermediate height and thickness, and it avoids areas with too much shrub encroachment. Its use of an area is dependent upon habitat conditions. This species is a ground feeder and forages mainly on insects but will occasionally eat seeds.

Although the proposed project would be located within an area that may be inhabited by the Sprague's pipit, there is currently no requirement under the Endangered Species Act for consultation regarding project impacts on that species. In the interest of conserving the Sprague's pipit, we encourage you to avoid project activities that would adversely affect that species or its habitat. Should it be federally listed as threatened or endangered in the future, however, further consultation on possible project impacts to that species could then be necessary.

Although scrub-shrub and forested areas in the project vicinity may provide habitat for bald eagles and colonial nesting waterbirds, project-associated impacts to those species are unlikely because they are not known to occur in the vicinity of the proposed study area. Though improbable, such nest sites and colonies may be present that are not currently listed in our database. We, therefore, recommend that on-site contract personnel be informed of the need to identify bald eagle nest sites and waterbird nesting colonies, and to avoid affecting them during the breeding season. To minimize disturbance to colonies containing nesting wading birds (i.e., herons, egrets, night-herons, ibis, and roseate spoonbills), anhingas, and/or cormorants, all activity occurring within 1,000 feet of a rookery should be restricted to the non-nesting period (i.e., September 1 through February 15, exact dates may vary within this window depending on species present). If a bald eagle nest is discovered within or adjacent to the proposed project

area, then an evaluation must be performed to determine whether the project is likely to disturb nesting bald eagles. That evaluation may be conducted on-line at: http://www.fws.gov/southeast/es/baldeagle. Following completion of the evaluation, that website will provide a determination of whether additional consultation is necessary and those results should be forwarded to this office.

Brown pelicans (*Pelecanus occidentalis*) may feed in open water habitats of the study area and its vicinity. Their closest known nesting site is Rabbit Island in Calcasieu Lake. In spring and summer, nests are built in mangrove trees or other shrubby vegetation, although ground nesting may also occur. Major threats to this species include chemical pollutants, colony site erosion, disease, and human disturbance. Though unlikely, should the proposed project directly or indirectly affect brown pelicans, further consultation with this office will be necessary.

The American alligator is also found in the study area, but is classified as "threatened due to similarity of appearance"; alligators are not biologically endangered or threatened. As plan formulation progresses, the Corps should continue to consult with the Service regarding potential impacts to threatened and endangered species.

### Wildlife Management Areas and Parks

Cameron Prairie and Lacassine National Wildlife Refuges are influenced by Mermentau Basin water levels. Potential project impacts to those refuges would be associated with any change in the water levels caused by Calcasieu Lock replacement structures and their operation. There are no state or national parks, state wildlife refuges or wildlife management areas located near the study area.

### Existing Coastal Restoration Projects

The Black Bayou Culverts Hydrologic Restoration project may be directly or indirectly impacted by the currently proposed project alternatives (particularly Alternatives 3, 4 and 5 which would involve the construction of a new lock in the center of the Black Bayou channel). That project was authorized and funded through the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) with the Natural Resources Conservation Service (NRCS) serving as the project sponsor. It was designed to facilitate a more efficient discharge of excess water within the Mermentau Basin, which is believed to have contributed to marsh loss and shoreline erosion. Completed in 2007, it is anticipated that this $7.3 million project will have a beneficial impact on over 72,000 acres of fish and wildlife habitat within the Mermentau Basin. NRCS and the Coastal Protection and Restoration Authority (CPRA [local sponsor for the project]) should be consulted regarding potential impacts to this existing restoration project.

## Future Fish and Wildlife Resources

As part of the development of the report entitled Coast 2050: Toward a Sustainable Coastal Louisiana, future wetland acreages were projected through the year 2050. For the

Calcasieu-Sabine Basin, a loss of 38,400 acres (12 percent) of marsh and 170 acres (100 percent) of swamp was projected between 1990 and 2050, at current levels of coastal restoration funding (Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority 1998). Land loss rates within the Calcasieu-Sabine Basin from 1933 to 1990 have averaged approximately 0.5 percent per year. The total Calcasieu-Sabine and Mermentau Basin loss rates are expected to be 12.1 and 13.4 percent, respectively, over the next 50 years. Land loss rates within the study area (northern Calcasieu Lake) have averaged 0.2 percent per year during 1933 to 1955, 0.78 percent per year from 1955 to 1978, 0.2 percent per year during 1974 to 1983, and 0.14 percent per year during 1983 to 1990 (Dunbar et al. 1992).

The major cause of land loss in the Calcasieu-Sabine Basin is saltwater intrusion caused by the larger navigation channels, namely the CRP and the GIWW (Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority 1998). Those major waterways have allowed saltwater intrusion from the Gulf of Mexico to enter Calcasieu Lake and its surrounding marshes. This increased salinity stresses less-saline marsh vegetation and leads to plant death and ultimately conversion of marsh to shallow open water.

Land loss within the Mermentau Basin may be due to a variety of factors including alterations to natural hydrology caused by the GIWW and major ship channels (i.e., the Mermentau River Navigation Channel), and shoreline erosion along major lakes, bays, and the Gulf of Mexico (Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority 1998). It has also been widely accepted that higher water levels within the Mermentau Lakes Subbasin caused by Corps-managed water control structures has accelerated land loss through at least three main mechanisms: 1) shoreline erosion along area lakes and bays; 2) floatant marsh washout; and 3) interior marsh die-back due to prolonged marsh flooding. However, according to Gammill et al. (2002), ". . . no scientific evidence exists to document the occurrence of these phenomena on a systemic scale in this ecosystem."

Sea level rise and subsidence also cause land loss (Penland and Ramsey 1990). The Calcasieu-Sabine Basin presently is experiencing moderate subsidence rates of 1.1 foot/century (Gagliano 1998, Penland and Suter 1989). The combination of subsidence and sea level rise is called submergence or land sinking. As the land sinks, the marshes become inundated with higher water levels, stressing most non-fresh marsh plants and leading to plant death and conversion of marshes to open water. Other major causes of study-area marsh loss include altered hydrology, storms, shoreline erosion, and development including the direct and indirect impacts of dredge and fill activities (Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority 1998).

The continued loss of wetlands represents the most serious fish and wildlife-related problem in the study area. Losses in wetlands would result in gains in open water habitat and, to a lesser extent, developed land. Wetland losses could be expected to cause significant declines in coastal fish and shellfish production, and in the study area's carrying capacity for migratory waterfowl, wading birds, other migratory birds, alligators, furbearers, and game mammals. Wetland losses will also reduce storm surge protection of developed lands, and will likely

contribute to water quality degradation associated with excessive nutrient inputs.

As described above, estuarine marsh is the primary type of EFH impacted by continued wetland loss and deterioration. Although an increase in some types of EFH (i.e., mud bottom and estuarine water column) would occur, adverse impacts would occur to more productive types of EFH (i.e., estuarine emergent wetlands). The loss of estuarine emergent wetlands would result in negative impacts to juvenile brown and white shrimp; eggs, larvae/postlarvae, and juvenile Gulf stone crab; and larvae/postlarvae, juvenile and adult red drum.

## DESCRIPTION OF TENTATIVELY SELECTED PLAN AND EVALUATED ALTERNATIVES

Tentatively Selected Plan (TSP) (Alternative 1): A 75 ft. Sluice gate (DAC) that is generally within the alignment of the previously proposed south lock. The outfall and intakes will need to be excavated with material being beneficially used for marsh creation. For safety, a guide wall extension or some other suitable structure to prevent barges from being affected by cross currents will need to be evaluated.

Alternative 2: A 3,700 cubic feet per second (cfs) pumping station (DAA2) would be constructed generally within the alignment of the previously proposed south lock. The outfall will need to be excavated with material being beneficially used for marsh creation. For safety, a guidewall extension or some other suitable structure to prevent barges from being affected by cross currents will need to be evaluated.

Alternative 3: Supplemental Culverts (DAE1) would be added to the Black Bayou NRCS structure to increase its capacity and operate in conjunctions with it. A weir (DAE5) would be constructed immediately east of the NRCS structure and would maintain the water elevation on the GIWW to the minimum 2.0 MLG (Mean Low Gulf). Black Bayou Dredging (DAE4) to the east and west of the NRCS structure will also occur.

Alternative 4: A 2,000 cfs Pumping Station (DAE2) would be constructed adjacent and north of the existing Black Bayou NRCS structure and operate in conjunction with it. The pump would likely be west of the road with pipes running under the roadway. A weir (DAE5) would be constructed immediately east of the NRCS structure and would maintain the water elevation on the GIWW to the minimum 2.0 MLG (Mean Low Gulf). Black Bayou Dredging (DAE4) to the east and west of the NRCS structure will also occur. This alternative operates in conjunction with the Black Bayou structure. This will require USACE to take over O&MRRR of the structure once its 20 project life under CWPRA ends. NOTE: Following IPR#1 in February 2013 it was determined that a 1,000 cfs pump would be insufficient to overcome the natural tendency to drain through the lock when the sector gates were open. Additional HH analysis indicated that a 2,000 cfs pump operating in conjunction with the Black Bayou structure would be sufficient to provide the drainage capacity the lock currently provides.

Alternative 5: A 3,700 cfs Pumping Station (DAE3) would be constructed adjacent and north of the existing Black Bayou NRCS structure. The pump would likely be west of the road with pipes running 16 under the roadway. A weir (DAE5) would be constructed immediately east of

the NRCS structure and would maintain the water elevation on the GIWW to the minimum 2.0 MLG (Mean Low Gulf). Black Bayou Dredging (DAE4) to the east and west of the NRCS structure will also occur. This alternative operates independent of the Black Bayou Structure.

Selection of the TSP utilized the newly implemented SMART (Specific, Measurable, Attainable, Risk Informed and Timely) Planning methods that have replaced the standard more detailed alternative analyses that the Service would usually rely upon to develop recommendations to conserve fish and wildlife resources. Therefore, while selection of a Tentatively Selected Plan (TSP) has occurred, changes to the TSP may be warranted based on further planning efforts and review of existing assumptions and modeling (i.e., quality control). Thus the Corps should continue to coordinate with all agencies during the remaining Feasibility phase and the Preconstruction, Engineering, and Design (PED) phase to ensure any new or changed project features, development of any operational plan (e.g., water control plan), further development of the mitigation plan (including monitoring and adaptive management) fully incorporate adequate fish and wildlife conservation measures and that those features can be adequately evaluated with regards to impacts to fish and wildlife resources and/or sufficiency in achieving mitigation.

Future documentation of detailed project planning (e.g., Design Documentation Report, Engineering Documentation Report, Plans and Specifications, or other similar documents) including mitigation, adaptive management, and monitoring plans should be coordinated with the Service and other natural resource agencies. We should be provided an opportunity to review and submit recommendations on the all work addressed in those reports. The need to prepare a Fish and Wildlife Coordination Act report for any of these documents should be discussed with the Service prior to beginning the detailed design/plan formulation that would be presented in each document.

Furthermore the Service should be contacted during preparation of the Project Management Plan (or equivalent document) for the PED phase to ensure that sufficient funds and time is allotted to complete all tasks necessary to comply with our responsibilities under Section 2(b) of the FWCA.

## EVALUATION METHODS FOR SELECTED PLAN AND ALTERNATIVES

Evaluations of the effects of the alternatives to fish and wildlife resources were conducted using the WVA methodology. Implementation of the WVA requires that habitat quality and quantity (acreage) are measured for baseline conditions, and predicted for future without-project and future with-project conditions. Each WVA model utilizes an assemblage of variables considered important to the suitability of that habitat type to support a diversity of fish and wildlife species. The WVA provides a quantitative estimate of project-related impacts to fish and wildlife resources; however, the WVA is based on separate models for bottomland hardwoods, chenier/coastal ridge, fresh/intermediate marsh, brackish marsh, and saline marsh. Although, the WVA may not include every environmental or behavioral variable that could limit population s below their habitat potential, it is widely acknowledged to provide a cost-effective means of assessing restoration measures in coastal wetland communities.

The WVA models operate under the assumption that optimal conditions for fish and wildlife habitat within a given coastal wetland type can be characterized, and that existing or predicted conditions can be compared to that optimum to provide an index of habitat quality. Habitat quality is estimated and expressed through the use of a mathematical model developed specifically for each wetland type. Each model consists of: (1) a list of variables that are considered important in characterizing community-level fish and wildlife habitat values; (2) a Suitability Index graph for each variable, which defines the assumed relationship between habitat quality (Suitability Index) and different variable values; and, (3) a mathematical formula that combines the Suitability Indices for each variable into a single value for wetland habitat quality, termed the Habitat Suitability Index (HSI).

The product of an HSI value and the acreage of available habitat for a given target year is known as the Habitat Unit (HU) and is the basic unit for measuring project effects on fish and wildlife habitat. HUs are annualized over the project life to determine the Average Annual Habitat Units (AAHUs) available for each habitat type. The change (increase or decrease) in AAHUs for each future with-project scenario, compared to future without-project conditions, provides a measure of anticipated impacts. A net gain in AAHUs indicates that the project is beneficial to the fish and wildlife community within that habitat type; a net loss of AAHUs indicates that the project would adversely impact fish and wildlife resources.

We recognize that the newly implemented SMART (Specific, Measurable, Attainable, Risk Informed and Timely) Planning methods that were incorporated into this projects planning process have replaced the standard more detailed impact and mitigation analyses that the Service would usually rely upon to develop mitigation recommendations. The new shortened time frame of the planning process has also reduced the amount of time used to fully develop and refine mitigation alternatives and alternative features. Therefore, extensive additional Service and other natural resource agency involvement prior to finalization of National Environmental Policy Act (NEPA) documents and during ongoing detailed planning, engineering, and design of specific project measures and associated maintenance, along with more-definitive project information that will be available during those planning phases, will be required so that we can continue to fulfill our responsibilities under Section 2(b) of the FWCA.

In addition, calculation of benefits derived from the mitigation area(s) and design (e.g., size, etc.) of those areas presented in this report should not be considered final but preliminary (but sufficient for early feasibility level analysis) based upon existing information gathered. Final design and benefits produced from any mitigation site is contingent upon additional engineering (e.g., settlement curves, etc.) and environmental data, if needed, gathered in future planning/design stages. Additional engineering analysis of mitigation plans (e.g., soil borings, settlement curves, etc.) should be completed prior to finalization of the NEPA document and signing of Record of Decision (ROD) or Finding of No Significant Impacts (FONSI). As the interagency team moves forward in developing project design and operation plans and more extensive modeling/analysis is conducted, habitat assessments previously conducted may need to be revised.

Our evaluation did not address possible beneficial wetland impacts that might be attributed to the ability of the proposed project to maintain and improve the overall health and productivity of the marsh ecosystem within the Mermentau Basin (which may be possible if the existing lock is used

for ecosystem-beneficial water level management within the Basin).

## IMPACTS OF SELECTED PLAN AND ALTERNATIVES

The most significant direct impact of the TSP (Alternative 1) is the excavation and placement of fill for the new lock within study-area brackish marshes and forested ridge habitat. Our assessment indicated that both Alternatives 1 and 2 would result in a loss of about 25 acres of brackish marsh and forested ridge habitat for a loss of 10.98 AAHUs (Table 1). Approximately 18 acres of EFH habitat would be impacted with implementation of the TSP. Construction of Alternatives 3, 4, or 5 would directly impact 33.7 acres of brackish and intermediate marsh resulting in the loss of 9.07 AAHUs.

Alternatives that had the potential to increase salinity levels within the Mermentau Basin were eliminated from further consideration; therefore impacts to water salinity were not addressed. According to the Corps, the main goal of the project is to decrease the head differential and high water velocity in the lock chamber by modifying the existing lock and redirecting some drainage flow from the Mermentau basin away from the existing lock. Either of these measures would likely increase the drainage efficiency and possibly reduce the duration of high water levels in the basin that could be detrimental to the interior wetlands. Neither measure would be expected to increase flooding duration; therefore, we do not expect indirect impacts to wetlands due to changes in hydrology. If proposed project features are modified so that they may affect the Basin hydrology differently than first described, an analysis of potential secondary impacts to wetlands by proposed project alternatives and features may be necessary. This would include impacts on Mermentau Basin water levels as affected by the replacement lock design and operation, as well as possible continued operation of the existing lock to aid in reduction of excess water levels in that Basin.

**Table 1. Preliminary Estimate of the Direct Impacts from the Various Alternatives for the Calcasieu Lock Replacement Study**

| Alternative (and Location) | Impacts By Habitat Type | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Upland Forested Ridge Habitat - Existing Spoil Disposal Areas** (acres/AAHUs) | **Brackish Marsh – emergent vegetated and associated water*** (acres/AAHUs) | **Intermediate Marsh – Emergent vegetated and associated water** (acres/AAHUs) | **Open Water within marsh (bayous, ponds)*** (acres) | **Deeper Open Water not in WVA calculations* (GIWW, Black Bayou)** (acres) | **Total Impact Acres** | **Total Impact AAHUs** |
| **#1 & 2** (Immediately South of the Existing Lock) | 11/7.2 | 14/3.78 | 0 | 4.29 | 0 | **25** | **10.98** |
| **#3, #4, & #5** (Black Bayou) | 0 | 10.5/1.56 | 23.2/7.51 | 9.2 | 64.5 | **33.7** | **9.07** |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| No Federal Action | 0 | 0 | 0 | 0 | 0 | **0** | **0** |

*Essential Fish Habitat

## FISH AND WILDLIFE CONSERVATION MEASURES AND COMPENSATORY MITIGATION

The President's Council on Environmental Quality defined the term "mitigation" in the National Environmental Policy Act regulations to include:

(a) avoiding the impact altogether by not taking a certain action or parts of an action; (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and (e) compensating for the impact by replacing or providing substitute resources or environments.

The Service supports and adopts this definition of mitigation and considers its specific elements to represent the desirable sequence of steps in the mitigation planning process.

The Service's Mitigation Policy (Federal Register, Volume 46, No. 15, January 23, 1981) identifies four resource categories that are used to ensure that the level of mitigation recommended by Service biologists will be consistent with the fish and wildlife resource values involved. Considering the high value of forested ridges and intermediate and brackish marsh for fish and wildlife and the relative scarcity of those habitat types, they are usually designated as Resource Category 2 habitat, the mitigation goal for which is no net loss of in-kind habitat value. Because the "no action" alternative was not selected, avoiding the project impacts altogether is not feasible. Because the excavated channel may require periodic maintenance no rectification mitigation is feasible, therefore, remaining project impacts should be mitigated via compensatory replacement of the habitat values lost.

Project plans should be designed to accomplish the project purpose while avoiding or at least minimizing impacts to fish and wildlife. The potential impacts to fish and wildlife due to the project should be considered equal to all other components during alternative evaluation and selection.

On April 10, 2008, the Corps and the Environmental Protection Agency (EPA) issued regulations governing compensatory mitigation for activities authorized by Department of the Army permits (Federal Register, Vol. 73, No. 70). Those regulations identified a 12-step process for developing a mitigation plan. That 12-step process and additional information can be found can be found at the following addresses:
http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/final_mitig_rule.pdf).

http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/mitig_info.aspx

If the Corps elects to do project-specific mitigation, then selection of specific mitigation sites and all aspects of mitigation planning, including an alternatives analysis for techniques, locations, design, and means to comply with the 12-step planning process should be coordinated with the Service and all interested Federal and State natural resource agencies. The Service would consider it acceptable to perform the required mitigation through an approved mitigation bank within or in an adjacent watershed.

Mitigation options within the project vicinity are somewhat limited. One option for brackish marsh mitigation for TSP impacts involves marsh creation using dredged material placement within adjacent shallow water. The material could be derived from dredging associated with the replacement of the existing lock and channel, dedicated dredging in Calcasieu Lake, or suitable (uncontaminated) material removed during CRP or GIWW maintenance dredging that would not otherwise be used for marsh creation. Based on preliminary WVA assessments of project mitigation needs, approximately 10 acres of shallow open water would have to be converted to a marsh (which could yield approximately 3.8 AAHUs) to mitigate for the impacts associated with Alternatives 1 or 2.

The Chenier-type forested habitat that would be impacted should be compensated in-kind by enhancement of the remaining forested ridge habitat in the project area or restoration of degraded/developed Cheniers. The Service would also consider bottomland hardwood (BLH) mitigation (including banks) in the project vicinity for the forested ridge habitat impacts because: (1) the habitat soils are spoil material, unlike those of natural Cheniers, thus likely limiting complete succession, (2) the area is dominated by the invasive Chinese tallow tree, and (3) it is located at the extreme northern end of the Chenier Plain where it provides limited functionality of the most significant value of Cheniers as a first stop resting and feeding place for birds migrating across the Gulf of Mexico.

To replace the TSP-related loss of moderate-quality forested ridge habitat, intermediate marsh, and brackish marsh, the Corps and the local sponsor should develop and fund mitigation actions that would produce the equivalent of 10.98 AAHUs (Table 1). The Service and other resource agencies would be involved in evaluating the adequacy of mitigation at any site. The Service recommends that the above planning objectives and conservation measures be integrated into future plan formulation activities for the Calcasieu Lock Replacement project.

The adequacy of mitigation measures to fully offset impacts to Essential Fishery Habitat should be discussed with the National Marine Fisheries Service to determine if additional mitigation is needed to comply with the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA, Magnuson-Stevens Act; P.L. 104-297, as amended) and its implementing regulations (NMFS 2008).

The preceding impacts and mitigation calculations may be modified as deemed necessary after discussion with the other natural resources agencies (e.g., NMFS and LDWF).

## SERVICE POSITION AND RECOMMENDATIONS

The Service's analysis of project alternatives considered for the study area has revealed the potential for significant adverse effects on fish and wildlife resources. Construction of the TSP (Alternative 1) would result in the loss of approximately 11 acres of forested ridge habitat and 14 acres of brackish marsh, for a loss of 7.2, and 3.78 AAHUs respectively. The impacts of the other alternatives evaluated are listed in Table 1. The Service does not object to providing more efficient navigation through the GIWW provided the following fish and wildlife conservation measures are implemented concurrently with project implementation to help ensure that fish and wildlife conservation receives equal consideration with other project purposes:

1. Fully compensate for unavoidable losses of important fish and wildlife habitat. The Corps shall provide in-kind mitigation for impacts to forested ridge habitat, brackish and intermediate marsh habitat to the extent determined for the selected project plan. With construction of the proposed TSP, approximately 11 acres of forested ridge habitat and 14 acres of brackish marsh would be impacted requiring mitigation for 7.2 AAHUs of forested ridge habitat and 3.78 AAHUs of brackish marsh. Calculation of benefits derived from the mitigation area(s) and design (e.g., size, etc.) of those areas presented in this report should not be considered final but preliminary (but sufficient for early feasibility level analysis) based upon existing information gathered. Final design and benefits produced from any mitigation site is contingent upon additional engineering (e.g., settlement curves, etc.) and environmental data, if needed, gathered in future planning/design stages.

2. The assessment of mitigation options for marsh impacts should include an evaluation of the feasibility of disposing project-associated dredged material in a manner that would create marsh in the adjacent shallow open water areas of the project area or in open water to the south of the lock in an area known as the Garrison site. Dredged material that is in excess of that needed for marsh impact mitigation should be used beneficially to create marsh at either or both of these sites (or other adjacent suitable sites). Marsh created beneficially should follow the same design criteria (e.g., initial disposal height, duration till containment dike gapping, etc.) as that used for each specific mitigation site.

3. Because of the expedited schedule, we recommend that the Corps continue to coordinate with the agencies during the remaining Feasibility phase and the Preconstruction, Engineering, and Design (PED) phase to ensure any new or changed project features, development of any operational plan (e.g., water control plan), further development of the mitigation plan (including monitoring and adaptive management) fully incorporate adequate fish and wildlife conservation measures and that those features can be adequately evaluated with regards to impacts to fish and wildlife resources and/or sufficiency in achieving mitigation.

4. Future documentation of detailed project planning (e.g., Design Documentation Report, Engineering Documentation Report, Plans and Specifications, or other similar documents) and any mitigation plans, including adaptive management and monitoring plans should be coordinated with the Service and other natural

resource agencies. The Service and other natural resource agencies should be provided an opportunity to review and submit recommendations on the all work addressed in those reports. The need to prepare a Fish and Wildlife Coordination Act report for any of these documents should be discussed with the Service prior to beginning the detailed design/plan formulation that would be presented in each document.

5. The Service, LDWF, NMFS and other natural resource agencies should be consulted regarding the adequacy of any proposed mitigation. Draft mitigation plans should be developed in cooperation with those agencies prior to the release of any National Environmental Policy Act documentation. That plan should be consistent to the extent practicable with existing habitat restoration and protection plans for this region, and should address the 12-step process for developing a mitigation plan (Federal Register, Vol. 73, No. 70). If determined to sufficiently offset impacts the Service can adopt and append the proposed mitigation report as an appendix to this report.

6. The adequacy of mitigation measures to fully offset impacts to Essential Fishery Habitat should be discussed with the National Marine Fisheries Service to determine if additional mitigation is needed to comply with the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA, Magnuson-Stevens Act; P.L. 104-297, as amended) and its implementing regulations.

7. Forested ridge clearing associated with project features should be avoided during the spring and fall to minimize impacts to staging or incoming migratory birds.

8. Water control structures should be designed to allow opening in the absence of an offsite power source after a major storm passage and water levels return to pre-storm levels.

9. There should be no changes to hydrology within the Mermentau Basin due to the proposed project that would adversely affect fish and wildlife resources.

10. The Service and the NMFS request that during development of the PED Project Management Plan (or equivalent document) we be allowed to review the projected funding and schedule to ensure that that sufficient time and funds are available during PED for the Service and NMFS to complete all work needed to fulfill the 2(b) requirements of the FWCA.

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
646 Cajundome Blvd.
Suite 400
Lafayette, Louisiana 70506
March 27, 2014

Colonel Richard L. Hansen
District Commander
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Colonel Hansen,

Please reference a February, 2014, Biological Assessment (BA) from the U. S. Army Corps of Engineers (Corps), New Orleans District, regarding the preparation of the Calcasieu Lock Louisiana Feasibility Study and Intergrated Environmental Impact Statement. That study includes a proposal to excavate an additional channel near the existing lock, install water control structures, and create marsh habitat during the disposal of the dredged material. The project BA included a determination that the proposed project is not likely to adversely affect any threatened or endangered species under the jurisdiction of the Service. We have reviewed the determination and offer the following comments under the authority of the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

Calcasieu Lock is located on the GIWW, just east of the Calcasieu River, in Calcasieu Parish, LA, approximately 10 miles south of Lake Charles, LA. According to the BA, the Corps intends to construct a new channel to carry freshwater flows from the Mermentau Basin around the south side of the existing Calcasieu Lock to Bayou Choupique. This channel, constructed by hydraulic cutterhead dredging, would be about 3,650 feet long and 200 feet wide at the top. The channel would be dredged to -12 feet North American Vertical Datum 1988 (NAVD 88), with a channel bottom width of 120 feet, and 1V on 3H side slopes. The channel will transition to -6.0 feet NAVD 88, with a channel bottom width of 150 feet at the structure. The transition will occur over 600 feet east and west of the structure at a 1V on 100H slope. A gated water control structure would be constructed inside the channel to control the passage of freshwater flows. The culvert structure consists of seven openings (9 feet x 14 feet each) that will allow for the passage of the additional flow

Approximately 215,000 cubic yards of dredged material would be generated from construction of the channel. Dredged material would be placed within the project area in areas of open water totaling about 50 acres. Placement of dredged material into these disposal sites is intended to convert open water to estuarine marsh. For disposal of dredged materials, a pipeline will be routed through the existing open water using floating and/or submerged pipeline. The dredged material would be placed to an initial slurry elevation of +3.5 feet NAVD88 with an anticipated final elevation of + 1.5 feet NAVD88 after consolidation.

Threatened and Endangered Species

The endangered West Indian manatee (*Trichechus manatus*) may be present in the project area; however, the Corps has included measures in their construction plans instructing all work personnel to be observant for the presence of manatees and to implement safety measures as necessary to avoid impacts. Therefore, the Service concurs with the Corps' determination that the proposed action is not likely to adversely affect the West Indian manatee. Final plans and specifications for the construction of the culvert, potentially including debris screens affixed to the culverts, and operation plans are not available at this time. We recommend that the Corps continue coordination with this office during future planning and construction phases of the proposed project regarding potential impacts to West Indian manatee.

Endangered and threatened sea turtles forage in the nearshore waters, bays and sounds of Louisiana. The National Marine Fisheries Service (NMFS) is responsible for aquatic marine threatened or endangered species. In a November 8, 2013, memorandum, the Corps was advised by the Service to consult with the NMFS Regional Office in St. Petersburg, Florida regarding sea turtles.

Other Federal Trust Species

The proposed project would be located in an area where bird nesting colonies may occur. Colonies may be present that are not currently listed in the database maintained by the Louisiana Department of Wildlife and Fisheries. That database is updated primarily by monitoring the colony sites that were previously surveyed during the 1980s. Until a new, comprehensive coast-wide survey is conducted to determine the location of newly-established nesting colonies, we recommend that a qualified biologist inspect the proposed work site for the presence of undocumented nesting colonies during the nesting season.

We appreciate the opportunity to review the threatened and endangered species determination in the BA for the Calcasieu Lock Louisiana Feasibility Study, and offer comments to further protect fish and wildlife resources. If you need further assistance or have questions regarding this letter, please contact David Castellanos (337/291-3112) of this office.

Sincerely,

Jeffrey D. Weller
Field Supervisor
Louisiana Ecological Services Office

cc: USACE, New Orleans District (Attn: Mr. Jeff Varisco)
USACE, St. Louis District (Attn: Mr. Tim George)
EPA, Dallas, TX
NMFS, Baton Rouge, LA
LDWF, Baton Rouge, LA
CPRA, Baton Rouge, LA
LDNR, CMD, Baton Rouge, LA

# United States Department of the Interior

FISH AND WILDLIFE SERVICE
646 Cajundome Blvd.
Suite 400
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March 27, 2014

Colonel Richard L. Hansen
District Commander
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Colonel Hansen:

Please reference the U.S. Army Corps of Engineers' Calcasieu Lock, Louisiana Feasibility Study to address proposed modifications to, and the possible replacement of, the Calcasieu Lock. The Fish and Wildlife Service, under provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) submits the enclosed Fish and Wildlife Service Coordination Act Report (FWCAR) containing a description of the existing fish and wildlife resources of the project area, discusses future with and without project habitat conditions, identifies fish and wildlife-related impacts of the proposed project, and provides recommendations to avoid, reduce, or compensate for impacts to fish and wildlife. That report supplements our draft FWCAR and incorporates comments from the National Marine Fisheries Service. That report constitutes the report of the Secretary of the Interior as required by Section 2(b) of the FWCA.

We look forward to actively participating in any future project planning and during construction. If your staff has any questions regarding our comments, please have them contact David Castellanos at (337) 291-3112.

Sincerely,

for Jeffrey D. Weller
Field Supervisor
Louisiana Ecological Services Office

Enclosure

cc: Southwest Louisiana Refuge Complex, Bell City, LA
EPA, Dallas, TX
NMFS, Baton Rouge, LA
LDWF, Baton Rouge, LA
LDNR, CMD, Baton Rouge, LA
CPRA, Baton Rouge, LA

# Fish and Wildlife Coordination Act Report

## Gulf Intracoastal Waterway
## Calcasieu Lock Feasibility Study
## Calcasieu Parish, Louisiana

PROVIDED TO
NEW ORLEANS DISTRICT
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA

PREPARED BY
DAVID CASTELLANOS
FISH AND WILDLIFE BIOLOGIST

FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
LAFAYETTE, LOUISIANA

**MARCH 2014**

FISH AND WILDLIFE SERVICE – SOUTHEAST REGION

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# INTRODUCTION

The U.S. Army Corps of Engineers (Corps), New Orleans District has initiated the Calcasieu Lock Feasibility Study to identify and address various alternatives to reduce navigation delays currently experienced with traversing the lock. This study is a supplement to the Intracoastal Waterway Locks, Louisiana Reconnaissance Report that focuses on the Calcasieu Lock (U.S. Corps of Engineers 1992). The present study was authorized by resolutions adopted by the Committees on Public Works of the United States Senate and the House of Representatives on September 29 and October 12, 1972, respectively. Navigation delays at Calcasieu Lock are primarily related to hydrologic conditions and how they affect the tonnage passing through the lock. The lock was constructed as a saltwater barrier; it is operated to keep salt water from moving west to east into the Mermentau Basin and to drain flood flows from east to west to the Calcasieu River. Delays can occur when there are excessive stages within the Mermentau Basin. During floods, the lock is frequently left open to drain water from the basin toward the Calcasieu River. During this situation, tows are forced to wait out the drainage event due to head differential and high velocities in the lock chamber. Altering the existing lock structure to decrease the impacts of drainage events on transiting tows would result in shorter transit times for tows staging at either segment of the GIWW (east or west). Fewer barge reconfigurations to allow for transit during drainage events will increase cycling times of tows through the lock. An additional or wider lock chamber would allow for passing of flows through the old lock or through a new wider lock that can accommodate drainage events and lockages. Redirecting completely or partially drainage flows away from the existing lock would reduce or eliminate the delays that result. The Fish and Wildlife Service (Service) submits the following comments under provisions of the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.); this document constitutes the report of the Secretary of the Interior as required by Section 2(b) of that Act. This report supplements our August 22, 2013, draft FWCA Report that addressed potential impacts and mitigation features for the Calcasieu Lock Feasibility Study. The draft of this report was provided to the Louisiana Department of Wildlife and Fisheries (LDWF) and the National Marine Fisheries Service (NMFS). The comments provided by the NMFS have been incorporated into our final report.

# DESCRIPTION OF STUDY AREA

The study area is located in the north-central portion of the Calcasieu Estuary, in south-central Calcasieu Parish, Louisiana (Figure 1). There is a relatively large expanse of wetlands and associated shallow open waters between the GIWW and Black Bayou, and to the west and southwest along Calcasieu Lake. Higher lands are associated with dredged disposal areas adjacent to the GIWW. Developed lands (residential, commercial, and agricultural) are located north of the GIWW, east and west of Louisiana Highway 384, and to the south near the community of Grand Lake. Navigation channels such as the GIWW and the Calcasieu River and Pass (CRP) are also prominent landscape features, as are extensive oil and gas industry access channels and pipeline canals.

Calcasieu Lock is one of the five major water control structures operated by the Corps that have

a significant influence on water and salinity levels in the Mermentau Basin. It also serves as a hydrologic partition, separating the Mermentau Basin to the east from the Calcasieu-Sabine Basin to the west. Hydrologic connectivity between the two basins is intermittent and primarily occurs when the Calcasieu Lock is opened to evacuate excess water from the Mermentau Basin following significant rainfall events. Those two basins are described in detail below.

## Mermentau Basin

The Mermentau Basin extends from the vicinity of Louisiana Highway 10 between Oakdale and Ville Platte, in Allen and Evangeline Parishes, respectively, southward to the Gulf of Mexico. The Basin encompasses an area of about 4.2 million acres and contains productive agricultural lands and a variety of natural environments (Corps 1999).

The Mermentau Basin is divided into three sub-basins: Upland, Lakes, and Chenier. The latter two sub-basins which comprise the Lower Mermentau Basin would be most likely affected by hydrology changes resulting from the replacement of, and/or the operational changes to, the Calcasieu Lock. Most, if not all, of the Upland Sub-basin, however, lies beyond the immediate influence of the lock. The Upland Sub-basin covers an area of 3,683 $mi^2$ of predominantly agricultural land (Gammill et al. 2002). The principal agricultural products in this region are rice and crawfish which both require ample supplies of fresh water typically provided via the Corps' management of the Mermentau Basin Project (Corps 1999).

The Lakes Sub-basin, of the Lower Mermentau Basin, is located between the GIWW and Louisiana Highway 82 and historically functioned as a brackish estuary (Corps 2008). Construction of navigation channels, locks, and water control structures has altered the historical north-south river and tidal-driven hydrology and shifted it to an east-west system that drains through the GIWW navigation channel. Corps' locks and water control structures that are located along the perimeter of the Lakes Sub-basin regulate both salinity and water level. The result is that the Mermentau Lakes Sub-basin now functions more as a freshwater reservoir and less as the low-salinity estuary it was prior to these alterations (Gammill et al. 2002). The demand for a reliable fresh water supply for agricultural use was the primary reason for the development of the Mermentau Basin Project (Corps 1999).

The Mermentau Basin Project involves the operation and management of five navigation locks and control structures by the Corps to maintain the Mermentau Lakes Sub-basin as a freshwater reservoir for agricultural use and to reduce the detrimental effects of saltwater intrusion on freshwater habitats. Those five structures are: (1) the Calcasieu Lock located on the GIWW near the intersection of Louisiana Highway 384, (2) the Leland Bowman Lock situated on the GIWW near Intracoastal City, (3) the Freshwater Bayou Lock located on the Freshwater Bayou Canal approximately one mile from the Gulf of Mexico, (4) the Catfish Point Control Structure located on the southwest side of the basin where the Mermentau River exits Grand Lake, and (5) the Schooner Bayou Control Structure found on the east side of the basin in the old Intracoastal Waterway between Freshwater Bayou and White Lake. The target water level inside the basin is 2.0 feet above mean low Gulf and the five Corps structures are operated in concert to maintain this level (Corps 1999).

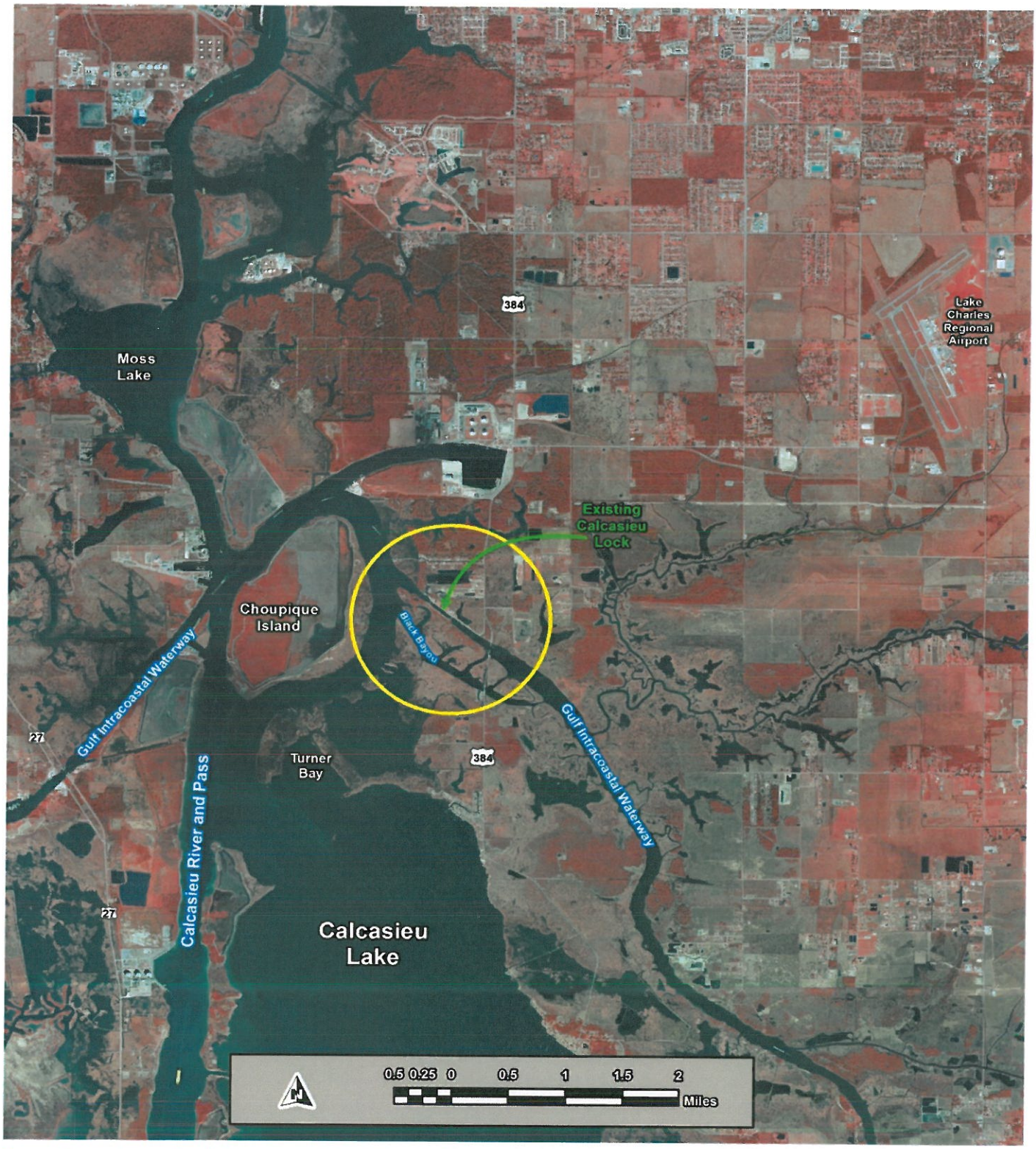


**Figure 1.** Calcasieu Lock Replacement Feasibility Study Area, in south-central Calcasieu Parish, Louisiana

The Chenier Sub-basin is located south of the Lakes Sub-basin between Louisiana Highway 82 and the Gulf of Mexico. Approximately one-third of this Sub-basin is comprised of the State-owned and operated Rockefeller Wildlife Refuge. The Chenier Sub-basin is characterized by tidally influenced salt marshes, though hydrology throughout much of the area is managed through impoundments that range in size from hundreds to thousands of acres. The purpose of that management is to control salinity in order to reduce wetland losses and/or sustain recreational and agricultural endeavors (Corps 2008).

## Calcasieu-Sabine Basin

The Calcasieu-Sabine Basin lies immediately west of the Mermentau Basin and consists of two semi-distinct sub-basins, the Calcasieu River Basin and the Sabine River Basin. When the GIWW was built in the 1920s, it breached the Gum Cove Ridge which had historically formed a north-to-south oriented hydrologic barrier between the Calcasieu and Sabine Lake systems. That breach now facilitates the movement of salt water westward into the Sabine Basin, and has exacerbated saltwater intrusion problems in the marshes adjacent to the GIWW. The typical water-movement scenario is that south winds push salt water into Calcasieu Lake, westward through the GIWW, and across the Gum Cove Ridge breach. This water is eventually swept down the Sabine River and into Sabine Lake. Currently, salt water that is pushed into Calcasieu Lake remains there because there is little back flow from the Lake. Without the Gum Cove Ridge breach, the current semi-circular flow patterns would not exist, and lake levels would rise more modestly, thus reducing the volume of seawater entering Calcasieu Lake (Lopez et al. 2008).

The widening and deepening of the CRP channel, which included the removal of the channel mouth bar, has increased saltwater and tidal intrusion into the Calcasieu-Sabine Basin, resulting in marsh loss, tidal export of organic marsh substrate, and an overall shift to more saline habitats in the region. In 1968, the Corps completed construction of the Calcasieu River Saltwater Barrier on the Calcasieu River north of the City of Lake Charles. This barrier minimized the flow of salt water into the upper reaches of the Calcasieu River to protect agricultural water supplies (Gammill et al. 2002). The primary saltwater barrier between the Mermentau and Calcasieu Basins is the Corps-maintained Calcasieu Lock, located east of the CRP on the GIWW near its intersection with Louisiana Highway 384. It was designed to prevent saltwater intrusion into the Mermentau Basin. It is operated primarily for navigation and salinity control, but during flooding events the structure is often operated for drainage of the Mermentau Basin. There is a continual effort by the Corps to balance lock operation for flood control to local communities (i.e, Mermentau Basin drainage) with the needs of waterborne commerce (Gammill et al. 2002).

# FISH AND WILDLIFE RESOURCE CONDITIONS

## Existing Conditions

### Major Habitat Types

Fish and wildlife habitat of the proposed study area and vicinity consists of open water ponds lakes, and other waterways, relatively small tracts of forests and scrub-shrub habitat, and intermediate, brackish, and saline marsh. The three major lakes potentially influenced by proposed changes to the Calcasieu Lock are Calcasieu, Grand, and White Lakes (numerous smaller waterbodies could also be affected). Those lakes were formed as bays at the mouths of drowned Pleistocene entrenched river valleys during the Holocene rise in sea level, over the past 5,000 years (Fisk 1944). Marshes within this region of the State began forming about 3,000-4,000 years ago during periods when the Mississippi River followed a more westerly course (Gosselink et al.1979). Expansive mud flats were created by large quantities of riverine sediment that accreted along the Gulf shoreline. Despite substantial hydrologic alterations, wetlands within the project vicinity continue to support nationally significant fish and wildlife resources. They provide important habitat for various species of plants, fish, and wildlife, serve as ground water recharge areas, provide storage areas for storm and flood waters, serve as natural water filtration areas, provide protection from wave action, erosion, and storm damage, and provide various consumptive and non-consumptive recreational opportunities.

Most project-area wetlands west of Louisiana Highway 384, along the northern portion of Calcasieu Lake, have been classified as brackish marshes since 1968 (Chabreck and Linscombe 1968, 1978, 1988, 1997, 2001, and 2007). Most other marshes in the immediate project vicinity are classified as intermediate. The most prevalent habitat types and their associated fish and wildlife values are described below.

### Forested Lands

Forests in the vicinity of the proposed study area are primarily located on higher elevations adjacent to marsh and vegetated with Chinese tallow-tree, rough-leaf dogwood, sugarberry, various species of pine, wax myrtle, hawthorn, and deciduous holly. Those forests provide important "stop over" habitat (resting and feeding sites) for song birds that migrate across the Gulf of Mexico. They also provide habitat for other migratory and resident avian species including northern cardinal, northern mockingbird, American woodcock, wood thrush, Louisiana waterthrush, yellow-billed cuckoo, Carolina chickadee, red-tailed hawk, red-shouldered hawk, and barred owl).

Mammals associated with forested lands in the study area include game species (such as eastern cottontail, swamp rabbit, white-tailed deer, and gray and fox squirrel), commercially important furbearers (such as river otter and muskrat), and other mammal species (such as striped skunk, coyote, Virginia opossum, cotton rat, marsh rice rat, and white-footed mouse). Reptiles which utilize study-area forested habitats include the ground skink, five-lined skink, green anole, and

western ribbon snake. Some of the amphibians expected to be found in study-area forested habitats include the small-mouthed salamander, green treefrog, bullfrog, and southern leopard frog.

## Scrub-Shrub

Typical vegetation in scrub-shrub habitat includes big-leaf sumpweed, common reed, Chinese tallow-tree, eastern baccharis, marsh elder, black willow, wax myrtle and goldenrod. Scrub-shrub habitat occurs on canal spoil banks, abandoned agricultural areas, and drained wetlands. Those habitats often support a variety of wildlife, depending on local conditions; they provide nesting and feeding sites for wading birds, songbirds and other birds, and wildlife escape cover.

## Estuarine Marsh and Associated Open Water

Study-area estuarine marshes extend westward from Louisiana Highway 384 toward the Calcasieu River and the northern portion of Calcasieu Lake. They are characterized by low to moderate daily tidal energy and by firm mineral to organic soils. Salinities vary, with peak salinities occurring in the late summer or fall. The lower-salinity estuarine marshes are often classified as intermediate; brackish to saline marshes occur at higher salinity levels. Estuarine marshes are predominantly vegetated with saltmeadow cordgrass, saltmarsh cordgrass, big cordgrass, Olney's bulrush, saltgrass, saltmarsh camphor-weed, seaside goldenrod, cow pea, common reed, marsh mallow, perennial saltmarsh aster, needle rush, and saltmarsh morning-glory. Brackish marsh ponds occasionally support extensive beds of widgeon-grass.

Estuarine marshes reduce erosion in adjacent non-wetland areas by dissipating wave and tidal energy. Such marshes also provide valuable wildlife habitat and important nursery and feeding habitat for estuarine-dependent fishes and shellfishes. Vegetative production rates in estuarine marshes are extremely high, providing an abundance of detritus to support the estuarine food web. The high primary productivity of Louisiana's coastal marshes is largely responsible for that area's role as the "fertile fisheries crescent" (Gunter 1967).

Estuarine marshes provide important habitat for the growth and production of estuarine-dependent species such as blue crab, white shrimp, brown shrimp, Gulf menhaden, Atlantic croaker, spot, red drum, black drum, sand seatrout, spotted seatrout, southern flounder, striped mullet, and other finfishes. Commercial shrimp harvests have been positively correlated with the area of tidal emergent wetlands (Turner 1977 and 1982). Future commercial harvests of shrimp and other fishes and shellfishes would likely be adversely impacted by continued losses in estuarine marsh habitat (Turner 1982).

Wildlife expected to utilize the study-area estuarine marshes include wading birds (herons, egrets, ibises, and roseate spoonbills), rails, migratory waterfowl (green-winged teal, blue-winged teal, mottled duck, gadwall, American widgeon, and lesser scaup), raptors, and songbirds. Brackish marshes having abundant submerged aquatic vegetation often support large numbers of puddle ducks. Shorebirds utilizing estuarine marshes include killdeer, American avocet, black-necked

stilt, common snipe, and various other species; seabirds include white pelican, brown pelican, black skimmer, herring gull, laughing gull, and several species of terns. Other nongame birds such as boat-tailed grackle, red-winged blackbird, seaside sparrow, olivaceous cormorant, belted kingfisher, and sedge wren also utilize estuarine marshes.

Estuarine marsh wildlife also includes swamp rabbit, nutria, muskrat, mink, river otter, raccoon, white-tailed deer, and coyote. Reptiles are limited primarily to the American alligator in intermediate and brackish marshes, and the diamond-backed terrapin and gulf salt marsh snake in brackish and saline marshes. Juvenile sea turtles may seasonally utilize Calcasieu Lake and marsh ponds in the lower Calcasieu Estuary.

## Essential Fish Habitat

The project is located within an area identified as Essential Fish Habitat (EFH) by the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA, Magnuson-Stevens Act; P.L. 104-297). The updated and revised 2006 generic amendment of the Fishery Management Plans for the Gulf of Mexico, prepared by the Gulf of Mexico Fishery Management Council, identifies EFH in the project area to be estuarine emergent wetlands, submerged aquatic vegetation, mud, and estuarine water column. Under the MSFCMA, wetlands and associated estuarine waters in the project area are identified as EFH for various federally managed species including: juvenile brown and white shrimp; eggs, larvae/postlarvae and larvae/postlarvae, juvenile, and adult red drum.

In addition to being designated as EFH for these species, water bodies and wetlands in the study area provide nursery and foraging habitats supportive of a variety of economically important marine fishery species, such as striped mullet, Atlantic croaker, gulf menhaden, spotted seatrout, sand seatrout, southern flounder, black drum, and blue crab. Some of these species also serve as prey for other fish species managed under the Magnuson-Stevens Act by the GMFMC (e.g., mackerels, snappers, and groupers) and highly migratory species managed by NMFS (e.g., billfishes and sharks) (NMFS 2008).

## Developed Lands

Developed areas are located on the higher elevations of the Pleistocene terrace north and south of the GIWW adjacent to the study area and are typically well drained. They include agricultural lands, and commercial and residential developments. Levees are also included in this category; they are frequently mowed, and, as such, provide poor wildlife habitat. Some levees are vegetated with an assortment of scrub/shrub species including marsh elder, eastern baccharis, Chinese tallow-tree, common reed, and goldenrod. These higher-elevation areas may provide low-to-moderate-value habitat for terrestrial wildlife, including some migratory bird species.

## Federally Protected Species

Federally listed as an endangered species, West Indian manatees (*Trichechus manatus*) have been occasionally observed along the Louisiana Gulf coast (primarily in southeast Louisiana). The

manatee has declined in numbers due to collisions with boats and barges, entrapment in flood control structures, poaching, habitat loss, and pollution. Cold weather and outbreaks of red tide may also adversely affect these animals. The Corps has consulted with the Service and has included protective measures recommended by the Service in their work plan. Therefore, in a March 27, 2014, letter, the Service concurred with the Corps's determination that the proposed project is not likely to adversely affect the West Indian manatee.

The proposed project area would be located in a Parish known to be used by the Sprague's pipit (*Anthus spragueii*), a candidate species for federal listing as a threatened or endangered species. Candidate species are those taxa for which the Service has on file sufficient information regarding biological vulnerability and threat(s) to support issuance of a proposal to list, but issuance of a proposed rule is currently precluded by higher priority listing actions. Sprague's pipit is a small (4 to 6 inches in length) passerine bird with a plain buffy face, a large eye-ring, and buff and blackish streaking on the crown, nape, and under parts. It winters in Louisiana, arriving from its northern breeding grounds in September and remaining until April. Migration and wintering ecology of this species is poorly known, but Sprague's pipit exhibits a strong preference for open grassland (i.e., native prairie) with native grasses of intermediate height and thickness, and it avoids areas with too much shrub encroachment. Its use of an area is dependent upon habitat conditions. This species is a ground feeder and forages mainly on insects but will occasionally eat seeds.

Although the proposed project would be located within an area that may be inhabited by the Sprague's pipit, there is currently no requirement under the Endangered Species Act for consultation regarding project impacts on that species. In the interest of conserving the Sprague's pipit, we encourage you to avoid project activities that would adversely affect that species or its habitat. Should it be federally listed as threatened or endangered in the future, however, further consultation on possible project impacts to that species could then be necessary.

Sea turtles are known to occur at least as far inland as the north shore of Calcasieu Lake and could potentially occur in the project area. There are five species of federally listed threatened or endangered sea turtles that forage in the near shore waters, bays, and estuaries of Louisiana. The National Marine Fisheries Service (NMFS) is responsible for aquatic marine threatened or endangered species that occur in the marine environment. In our August 22, 2013, Draft Fish and Wildlife Coordination Act Report, the service advised the Corps to contact Eric Hawk (727/824-5312) at the NMFS Regional Office in St. Petersburg, Florida, regarding consultation for those species in the marine environment.

Although scrub-shrub and forested areas in the project vicinity may provide habitat for bald eagles and colonial nesting waterbirds, project-associated impacts to those species are unlikely because they are not known to occur in the vicinity of the proposed study area. Though improbable, such nest sites and colonies may be present that are not currently listed in our database. We, therefore, recommend that on-site contract personnel be informed of the need to identify bald eagle nest sites and waterbird nesting colonies, and to avoid affecting them during the breeding season. To minimize disturbance to colonies containing nesting wading birds (i.e., herons, egrets, night-herons, ibis, and roseate spoonbills), anhingas, and/or cormorants, all activity occurring within 1,000 feet of a rookery should be restricted to the non-nesting period (i.e., September 1 through February 15, exact dates may vary within this window depending on species present). If

a bald eagle nest is discovered within or adjacent to the proposed project area, then an evaluation must be performed to determine whether the project is likely to disturb nesting bald eagles. That evaluation may be conducted on-line at: http://www.fws.gov/southeast/es/baldeagle. Following completion of the evaluation, that website will provide a determination of whether additional consultation is necessary and those results should be forwarded to this office.

Brown pelicans (*Pelecanus occidentalis*) may feed in open water habitats of the study area and its vicinity. Their closest known nesting site is Rabbit Island in Calcasieu Lake. In spring and summer, nests are built in mangrove trees or other shrubby vegetation, although ground nesting may also occur. Major threats to this species include chemical pollutants, colony site erosion, disease, and human disturbance. Though unlikely, should the proposed project directly or indirectly affect brown pelicans, further consultation with this office will be necessary.

The American alligator is also found in the study area, but is classified as "threatened due to similarity of appearance"; alligators are not biologically endangered or threatened. As plan formulation progresses, the Corps should continue to consult with the Service regarding potential impacts to threatened and endangered species.

### Wildlife Management Areas and Parks

Cameron Prairie and Lacassine National Wildlife Refuges are influenced by Mermentau Basin water levels. Potential project impacts to those refuges would be associated with any change in the water levels caused by Calcasieu Lock replacement structures and their operation. There are no state or national parks, state wildlife refuges or wildlife management areas located near the study area.

### Existing Coastal Restoration Projects

The Black Bayou Culverts Hydrologic Restoration project may be directly or indirectly impacted by the currently proposed project alternatives (particularly Alternatives 3, 4 and 5 which would involve the construction of a new lock in the center of the Black Bayou channel). That project was authorized and funded through the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) with the Natural Resources Conservation Service (NRCS) serving as the project sponsor. It was designed to facilitate a more efficient discharge of excess water within the Mermentau Basin, which is believed to have contributed to marsh loss and shoreline erosion. Completed in 2007, it is anticipated that this $7.3 million project will have a beneficial impact on over 72,000 acres of fish and wildlife habitat within the Mermentau Basin. NRCS and the Coastal Protection and Restoration Authority (CPRA [local sponsor for the project]) should be consulted regarding potential impacts to this existing restoration project.

## Future Fish and Wildlife Resources

As part of the development of the report entitled Coast 2050: Toward a Sustainable Coastal Louisiana, future wetland acreages were projected through the year 2050. For the

Calcasieu-Sabine Basin, a loss of 38,400 acres (12 percent) of marsh and 170 acres (100 percent) of swamp was projected between 1990 and 2050, at current levels of coastal restoration funding (Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority 1998). Land loss rates within the Calcasieu-Sabine Basin from 1933 to 1990 have averaged approximately 0.5 percent per year. The total Calcasieu-Sabine and Mermentau Basin loss rates are expected to be 12.1 and 13.4 percent, respectively, over the next 50 years. Land loss rates within the study area (northern Calcasieu Lake) have averaged 0.2 percent per year during 1933 to 1955, 0.78 percent per year from 1955 to 1978, 0.2 percent per year during 1974 to 1983, and 0.14 percent per year during 1983 to 1990 (Dunbar et al. 1992).

The major cause of land loss in the Calcasieu-Sabine Basin is saltwater intrusion caused by the larger navigation channels, namely the CRP and the GIWW (Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority 1998). Those major waterways have allowed saltwater intrusion from the Gulf of Mexico to enter Calcasieu Lake and its surrounding marshes. This increased salinity stresses less-saline marsh vegetation and leads to plant death and ultimately conversion of marsh to shallow open water.

Land loss within the Mermentau Basin may be due to a variety of factors including alterations to natural hydrology caused by the GIWW and major ship channels (i.e., the Mermentau River Navigation Channel), and shoreline erosion along major lakes, bays, and the Gulf of Mexico (Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority 1998). It has also been widely accepted that higher water levels within the Mermentau Lakes Subbasin caused by Corps-managed water control structures has accelerated land loss through at least three main mechanisms: 1) shoreline erosion along area lakes and bays; 2) floatant marsh washout; and 3) interior marsh die-back due to prolonged marsh flooding. However, according to Gammill et al. (2002), ". . . no scientific evidence exists to document the occurrence of these phenomena on a systemic scale in this ecosystem."

Sea level rise and subsidence also cause land loss (Penland and Ramsey 1990). The Calcasieu-Sabine Basin presently is experiencing moderate subsidence rates of 1.1 foot/century (Gagliano 1998, Penland and Suter 1989). The combination of subsidence and sea level rise is called submergence or land sinking. As the land sinks, the marshes become inundated with higher water levels, stressing most non-fresh marsh plants and leading to plant death and conversion of marshes to open water. Other major causes of study-area marsh loss include altered hydrology, storms, shoreline erosion, and development including the direct and indirect impacts of dredge and fill activities (Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority 1998).

The continued loss of wetlands represents the most serious fish and wildlife-related problem in the study area. Losses in wetlands would result in gains in open water habitat and, to a lesser extent, developed land. Wetland losses could be expected to cause significant declines in coastal fish and shellfish production, and in the study area's carrying capacity for migratory waterfowl, wading birds, other migratory birds, alligators, furbearers, and game mammals. Wetland losses will also reduce storm surge protection of developed lands, and will likely contribute to water quality

degradation associated with excessive nutrient inputs.

As described above, estuarine marsh is the primary type of EFH impacted by continued wetland loss and deterioration. Although an increase in some types of EFH (i.e., mud bottom and estuarine water column) would occur, adverse impacts would occur to more productive types of EFH (i.e., estuarine emergent wetlands). The loss of estuarine emergent wetlands would result in negative impacts to juvenile brown and white shrimp; eggs, larvae/postlarvae, and juvenile Gulf stone crab; and larvae/postlarvae, juvenile and adult red drum.

## DESCRIPTION OF TENTATIVELY SELECTED PLAN AND EVALUATED ALTERNATIVES

Recommended Plan (Alternative 1): A new channel is to carry freshwater flows from the Mermentau Basin around the south side of the existing Calcasieu Lock to Bayou Choupique. This channel, constructed by hydraulic dredging, will be about 3,650 feet long and 200 feet wide at the top. The channel will be dredged to -12 NAVD 88, with a channel bottom width of 120 feet. A gated water control structure will be constructed inside the channel to control the passage of freshwater flows. The 114-feet wide, 110-feet long culvert structure consists of seven openings (9 feet x 14 feet each) that will allow for the passage of the additional flow. The outfall and intakes will need to be excavated with material (approximately 233,000 cubic yards) being beneficially used for marsh creation (approximately 50 acres). For safety, a guide wall extension or some other suitable structure to prevent barges from being affected by cross currents will need to be evaluated (Figure 2).

Alternative 2: A 3,700 cubic feet per second (cfs) pumping station would be constructed generally within the alignment of the previously proposed south lock. The outfall will need to be excavated with material being beneficially used for marsh creation. For safety, a guidewall extension or some other suitable structure to prevent barges from being affected by cross currents will need to be evaluated.

Alternative 3: Supplemental Culverts would be added to the Black Bayou NRCS structure to increase its capacity and operate in conjunctions with it. A weir would be constructed immediately east of the NRCS structure and would maintain the water elevation on the GIWW to the minimum 2.0 MLG (Mean Low Gulf). Black Bayou Dredging to the east and west of the NRCS structure will also occur.

Alternative 4: A 2,000 cfs Pumping Station would be constructed adjacent and north of the existing Black Bayou NRCS structure and operate in conjunction with it. The pump would likely be west of the road with pipes running under the roadway. A weir would be constructed immediately east of the NRCS structure and would maintain the water elevation on the GIWW to the minimum 2.0 MLG (Mean Low Gulf). Black Bayou Dredging to the east and west of the NRCS structure will also occur. This alternative operates in conjunction with the Black Bayou structure. This will require USACE to take over O&MRRR of the structure once its 20 project life under CWPRA ends. NOTE: Following IPR#1 in February 2013

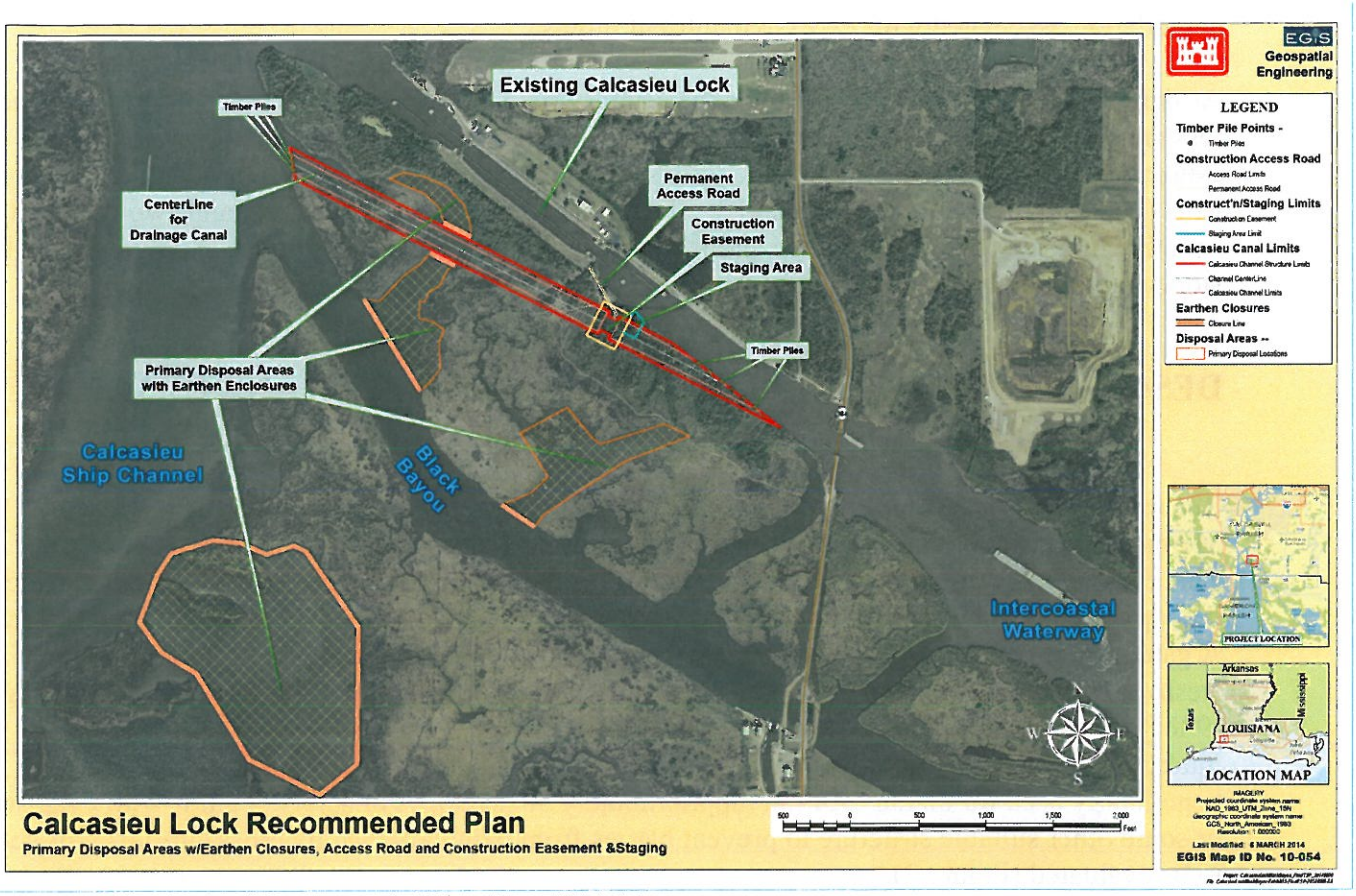


**Figure 2**. Calcasieu Lock Recommended Plan. From USACE.

it was determined that a 1,000 cfs pump would be insufficient to overcome the natural tendency to drain through the lock when the sector gates were open. Additional HH analysis indicated that a 2,000 cfs pump operating in conjunction with the Black Bayou structure would be sufficient to provide the drainage capacity the lock currently provides.

Alternative 5: A 3,700 cfs Pumping Station would be constructed adjacent and north of the existing Black Bayou NRCS structure. The pump would likely be west of the road with pipes running 16 under the roadway. A weir would be constructed immediately east of the NRCS structure and would maintain the water elevation on the GIWW to the minimum 2.0 MLG (Mean Low Gulf). Black Bayou Dredging to the east and west of the NRCS structure will also occur. This alternative operates independent of the Black Bayou Structure.

Selection of the TSP utilized the newly implemented SMART (Specific, Measurable, Attainable, Risk Informed and Timely) Planning methods that have replaced the standard more detailed alternative analyses that the Service would usually rely upon to develop recommendations to conserve fish and wildlife resources. Therefore, while selection of a Recommended Plan has occurred, changes to the Recommended Plan may be warranted based on further planning efforts and review of existing assumptions and modeling (i.e., quality control). Thus the Corps should continue to coordinate with all agencies during the remaining Feasibility phase and the Preconstruction, Engineering, and Design (PED) phase to ensure any new or changed project features, development of any operational plan (e.g., water control plan), and further development

of the mitigation plan (including monitoring and adaptive management [also applicable to plans for beneficial disposal of material dredged during project construction to offset marsh habitat impacts monitoring and adaptive management]) fully incorporate adequate fish and wildlife conservation measures and that those features can be adequately evaluated with regards to impacts to fish and wildlife resources and/or sufficiency in achieving mitigation.

Future documentation of detailed project planning (e.g., Design Documentation Report, Engineering Documentation Report, Plans and Specifications, or other similar documents) including mitigation, adaptive management, and monitoring plans should be coordinated with the Service and other natural resource agencies. We should be provided an opportunity to review and submit recommendations on the all work addressed in those reports. The need to prepare a Fish and Wildlife Coordination Act report for any of these documents should be discussed with the Service prior to beginning the detailed design/plan formulation that would be presented in each document.

Furthermore the Service should be contacted during preparation of the Project Management Plan (or equivalent document) for the PED phase to ensure that sufficient funds and time is allotted to complete all tasks necessary to comply with our responsibilities under Section 2(b) of the FWCA.

## EVALUATION METHODS FOR SELECTED PLAN AND ALTERNATIVES

Evaluations of the effects of the alternatives to fish and wildlife resources were conducted using the WVA methodology. Implementation of the WVA requires that habitat quality and quantity (acreage) are measured for baseline conditions, and predicted for future without-project and future with-project conditions. Each WVA model utilizes an assemblage of variables considered important to the suitability of that habitat type to support a diversity of fish and wildlife species. The WVA provides a quantitative estimate of project-related impacts to fish and wildlife resources; however, the WVA is based on separate models for bottomland hardwoods, chenier/coastal ridge, fresh/intermediate marsh, brackish marsh, and saline marsh. Although, the WVA may not include every environmental or behavioral variable that could limit populations below their habitat potential, it is widely acknowledged to provide a cost-effective means of assessing restoration measures in coastal wetland communities.

The WVA models operate under the assumption that optimal conditions for fish and wildlife habitat within a given coastal wetland type can be characterized, and that existing or predicted conditions can be compared to that optimum to provide an index of habitat quality. Habitat quality is estimated and expressed through the use of a mathematical model developed specifically for each wetland type. Each model consists of: (1) a list of variables that are considered important in characterizing community-level fish and wildlife habitat values; (2) a Suitability Index graph for each variable, which defines the assumed relationship between habitat quality (Suitability Index) and different variable values; and, (3) a mathematical formula that combines the Suitability Indices for each variable into a single value for wetland habitat quality, termed the Habitat Suitability Index (HSI).

The product of an HSI value and the acreage of available habitat for a given target year is known as the Habitat Unit (HU) and is the basic unit for measuring project effects on fish and wildlife

habitat. HUs are annualized over the project life to determine the Average Annual Habitat Units (AAHUs) available for each habitat type. The change (increase or decrease) in AAHUs for each future with-project scenario, compared to future without-project conditions, provides a measure of anticipated impacts. A net gain in AAHUs indicates that the project is beneficial to the fish and wildlife community within that habitat type; a net loss of AAHUs indicates that the project would adversely impact fish and wildlife resources.

We recognize that the newly implemented SMART (Specific, Measurable, Attainable, Risk Informed and Timely) Planning methods that were incorporated into this projects planning process have replaced the standard more detailed impact and mitigation analyses that the Service would usually rely upon to develop mitigation recommendations. The new shortened time frame of the planning process has also reduced the amount of time used to fully develop and refine mitigation alternatives and alternative features. Therefore, extensive additional Service and other natural resource agency involvement prior to finalization of National Environmental Policy Act (NEPA) documents and during ongoing detailed planning, engineering, and design of specific project measures and associated maintenance, along with more-definitive project information that will be available during those planning phases, will be required so that we can continue to fulfill our responsibilities under Section 2(b) of the FWCA.

In addition, calculation of benefits derived from the potential mitigation (including beneficial disposal) area(s) and design (e.g., size, etc.) of those areas presented in this report should not be considered final but preliminary (but sufficient for early feasibility level analysis) based upon existing information gathered. Final design and benefits produced from any mitigation site is contingent upon additional engineering (e.g., settlement curves, etc.) and environmental data, if needed, gathered in future planning/design stages. Additional engineering analysis of mitigation plans (e.g., soil borings, settlement curves, etc.) should be completed prior to finalization of the NEPA document and signing of Record of Decision (ROD) or Finding of No Significant Impacts (FONSI). As the interagency team moves forward in developing project design and operation plans and more extensive modeling/analysis is conducted, habitat assessments previously conducted may need to be revised.

Our evaluation did not address possible beneficial wetland impacts that might be attributed to the ability of the proposed project to maintain and improve the overall health and productivity of the marsh ecosystem within the Mermentau Basin (which may be possible if the existing lock is used for ecosystem-beneficial water level management within the Basin).

## IMPACTS OF SELECTED PLAN AND ALTERNATIVES

The most significant direct impact of the Recommended Plan (Alternative 1) is the excavation and placement of fill for the new lock within study-area brackish marshes and forested ridge habitat. Our assessment indicated that both Alternatives 1 and 2 would result in a loss of about 25 acres of brackish marsh and forested ridge habitat for a loss of 10.98 AAHUs (Table 1). Approximately 18 acres of EFH habitat would be impacted with implementation of the Recommended Plan. Construction of Alternatives 3, 4, or 5 would directly impact 33.7 acres of brackish and intermediate marsh resulting in the loss of 9.07 AAHUs.

Alternatives that had the potential to increase salinity levels within the Mermentau Basin were eliminated from further consideration; therefore impacts to water salinity were not addressed. According to the Corps, the main goal of the project is to decrease the head differential and high water velocity in the lock chamber by modifying the existing lock and redirecting some drainage flow from the Mermentau basin away from the existing lock. Either of these measures would likely increase the drainage efficiency and possibly reduce the duration of high water levels in the basin that could be detrimental to the interior wetlands. Neither measure would be expected to increase flooding duration; therefore, we do not expect indirect impacts to wetlands due to changes in hydrology. If proposed project features are modified so that they may affect the Basin hydrology differently than first described, an analysis of potential secondary impacts to wetlands by proposed project alternatives and features may be necessary. This would include impacts on Mermentau Basin water levels as affected by the replacement lock design and operation, as well as possible continued operation of the existing lock to aid in reduction of excess water levels in that Basin.

**Table 1. Preliminary Estimate of the Direct Impacts from the Various Alternatives for the Calcasieu Lock Feasibility Study**

| Alternative (and Location) | Impacts By Habitat Type | | | | | | |
|---|---|---|---|---|---|---|---|
| | Upland Forested Ridge Habitat - Existing Spoil Disposal Areas (acres/AAHUs) | Brackish Marsh – emergent vegetated and associated water* (acres/AAHUs) | Intermediate Marsh – Emergent vegetated and associated water (acres/AAHUs) | Open Water within marsh (bayous, ponds)* (acres) | Deeper Open Water not in WVA calculations* (GIWW, Black Bayou) (acres) | Total Impact Acres | Total Impact AAHUs |
| **#1 & 2** (Immediately South of the Existing Lock) | 11/7.2 | 14/3.78 | 0 | 4.29 | 0 | **25** | **10.98** |
| **#3, #4, & #5** (Black Bayou) | 0 | 10.5/1.56 | 23.2/7.51 | 9.2 | 64.5 | **33.7** | **9.07** |
| No Federal Action | 0 | 0 | 0 | 0 | 0 | **0** | **0** |

*Essential Fish Habitat

## FISH AND WILDLIFE CONSERVATION MEASURES AND COMPENSATORY MITIGATION

The President's Council on Environmental Quality defined the term "mitigation" in the National Environmental Policy Act regulations to include:

(a) avoiding the impact altogether by not taking a certain action or parts of an action; (b)

minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and (e) compensating for the impact by replacing or providing substitute resources or environments.

The Service supports and adopts this definition of mitigation and considers its specific elements to represent the desirable sequence of steps in the mitigation planning process.

The Service's Mitigation Policy (Federal Register, Volume 46, No. 15, January 23, 1981) identifies four resource categories that are used to ensure that the level of mitigation recommended by Service biologists will be consistent with the fish and wildlife resource values involved. Considering the high value of forested ridges and intermediate and brackish marsh for fish and wildlife and the relative scarcity of those habitat types, they are usually designated as Resource Category 2 habitat, the mitigation goal for which is no net loss of in-kind habitat value. Because the "no action" alternative was not selected, avoiding the project impacts altogether is not feasible. Because the excavated channel may require periodic maintenance no rectification mitigation is feasible. Remaining project impacts to forested ridge habitat will require compensatory mitigation. Compensatory replacement of marsh habitat values lost due to the project will be achieved by habitat creation in areas adjacent and nearby the project area using material excavated during construction of the project.

Project plans should be designed to accomplish the project purpose while avoiding or at least minimizing impacts to fish and wildlife. The potential impacts to fish and wildlife due to the project should be considered equal to all other components during alternative evaluation and selection.

On April 10, 2008, the Corps and the Environmental Protection Agency (EPA) issued regulations governing compensatory mitigation for activities authorized by Department of the Army permits (Federal Register, Vol. 73, No. 70). Those regulations identified a 12-step process for developing a mitigation plan. That 12-step process and additional information can be found can be found at the following addresses:
http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/final_mitig_rule.pdf).
http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/mitig_info.aspx

The Corps has elected to do project-specific mitigation; selection of specific mitigation sites and all aspects of mitigation planning, including an alternatives analysis for techniques, locations, design, and means to comply with the 12-step planning process should be coordinated with the Service and all interested Federal and State natural resource agencies. The Service would consider it acceptable to perform the required mitigation through an approved mitigation bank within or in an adjacent watershed.

Mitigation options within the project vicinity are somewhat limited. To offset impacts to brackish marsh due to the Recommended Plan the Corps intends to create brackish marsh using dredged material placement within adjacent shallow water. The material would be derived from dredging associated with construction of the proposed project. Based on preliminary WVA assessments of project mitigation needs, approximately 10 acres of shallow open water would

have to be converted to a marsh (which could yield approximately 3.8 AAHUs) to mitigate for the impacts associated with Alternatives 1 or 2.

The Chenier-type forested habitat that would be impacted should be compensated in-kind by enhancement of the remaining forested ridge habitat in the project area or restoration of degraded/developed Cheniers. The Service would also consider bottomland hardwood (BLH) mitigation (including banks) in the project vicinity for the forested ridge habitat impacts because: (1) the habitat soils are spoil material, unlike those of natural Cheniers, thus likely limiting complete succession, (2) the area contains some invasive Chinese tallow trees, and (3) it is located at the extreme northern end of the Chenier Plain where it provides limited functionality of the most significant value of Cheniers as a first stop resting and feeding place for birds migrating across the Gulf of Mexico.

To replace the Recommended Plan-related loss of moderate-quality forested ridge habitat, intermediate marsh, and brackish marsh, the Corps and the local sponsor should develop and fund mitigation actions that would produce the equivalent of 10.98 AAHUs (Table 1). The Service and other resource agencies would be involved in evaluating the adequacy of mitigation at any site. The Service recommends that the above planning objectives and conservation measures be integrated into future plan formulation activities for the Calcasieu Lock Replacement project.

The adequacy of mitigation measures (i.e., 1.5 acres of mitigation for every 1 acre of marsh impact) to fully offset impacts to Essential Fishery Habitat should be discussed with the National Marine Fisheries Service to determine if additional mitigation is needed to comply with the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA, Magnuson-Stevens Act; P.L. 104-297, as amended) and its implementing regulations (NMFS 2008).

The preceding impacts and mitigation calculations may be modified as deemed necessary after discussion with the other natural resources agencies (e.g., NMFS and LDWF).

## SERVICE POSITION AND RECOMMENDATIONS

The Service's analysis of project alternatives considered for the study area has revealed the potential for significant adverse effects on fish and wildlife resources. Construction of the TSP (Alternative 1) would result in the loss of approximately 11 acres of forested ridge habitat and 14 acres of brackish marsh, for a loss of 7.2, and 3.78 AAHUs respectively. The impacts of the other alternatives evaluated are listed in Table 1. The Service does not object to providing more efficient navigation through the GIWW provided the following fish and wildlife conservation measures are implemented concurrently with project implementation to help ensure that fish and wildlife conservation receives equal consideration with other project purposes:

1. Fully compensate for unavoidable losses of important fish and wildlife habitat. The Corps shall provide in-kind mitigation (including beneficial disposal of material dredged during project construction to offset marsh habitat impacts) for impacts to forested ridge habitat, brackish and intermediate marsh habitat to the extent determined for the selected project plan. With construction of the Recommended Plan, approximately 11 acres of forested ridge habitat and 14 acres of brackish

marsh would be impacted requiring mitigation for 7.2 AAHUs of forested ridge habitat and 3.78 AAHUs of brackish marsh. Calculation of benefits derived from the mitigation area(s) and design (e.g., size, etc.) of those areas presented in this report should not be considered final but preliminary (but sufficient for early feasibility level analysis) based upon existing information gathered. Final design and benefits produced from any mitigation site is contingent upon additional engineering (e.g., settlement curves, etc.) and environmental data, if needed, gathered in future planning/design stages.

2. The assessment of mitigation options for marsh impacts should include an evaluation of the feasibility of disposing project-associated dredged material in a manner that would create marsh in the adjacent shallow open water areas of the project area or in open water to the south of the lock in an area known as the Garrison site. Dredged material that is in excess of that needed for marsh impact mitigation should be used beneficially to create marsh at either or both of these sites (or other adjacent suitable sites). Marsh created beneficially should follow the same design criteria (e.g., initial disposal height, duration till containment dike gapping, etc.) as that used for each specific mitigation site.

3. Because of the expedited schedule, we recommend that the Corps continue to coordinate with the agencies during the remaining Feasibility phase and the Preconstruction, Engineering, and Design (PED) phase to ensure any new or changed project features, development of any operational plan (e.g., water control plan), further development of the mitigation plan (including monitoring and adaptive management) fully incorporate adequate fish and wildlife conservation measures and that those features can be adequately evaluated with regards to impacts to fish and wildlife resources and/or sufficiency in achieving mitigation.

4. Future documentation of detailed project planning (e.g., Design Documentation Report, Engineering Documentation Report, Plans and Specifications, or other similar documents) and any mitigation plans, including adaptive management and monitoring plans should be coordinated with the Service and other natural resource agencies. The Service and other natural resource agencies should be provided an opportunity to review and submit recommendations on the all work addressed in those reports. The need to prepare a Fish and Wildlife Coordination Act report for any of these documents should be discussed with the Service prior to beginning the detailed design/plan formulation that would be presented in each document.

5. The Service, LDWF, NMFS and other natural resource agencies should be consulted regarding the adequacy of any proposed mitigation (including beneficial use of material dredged during project construction to offset marsh habitat impacts). Draft mitigation plans should be developed in cooperation with those agencies prior to the release of any National Environmental Policy Act documentation. That plan should be consistent to the extent practicable with existing habitat restoration and protection plans for this region, and should address the 12-step process for developing a mitigation plan (Federal Register, Vol. 73, No. 70).

6. The adequacy of mitigation measures (i.e., 1.5 acres of mitigation for every 1 acre of marsh impact) to fully offset impacts to Essential Fishery Habitat should be discussed with the National Marine Fisheries Service to determine if additional mitigation is needed to comply with the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA, Magnuson-Stevens Act; P.L. 104-297, as amended) and its implementing regulations.

7. Forested ridge clearing associated with project features should be avoided during the spring and fall to minimize impacts to staging or incoming migratory birds.

8. Water control structures should be designed to allow opening in the absence of an offsite power source after a major storm passage and water levels return to pre-storm levels.

9. There should be no changes to hydrology within the Mermentau Basin due to the proposed project that would adversely affect fish and wildlife resources.

10. The Service and the NMFS request that during development of the PED Project Management Plan (or equivalent document) we be allowed to review the projected funding and schedule to ensure that that sufficient time and funds are available during PED for the Service and NMFS to complete all work needed to fulfill the 2(b) requirements of the FWCA.

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# CALCASIEU LOCK LOUISIANA
# FEASIBILITY STUDY

## APPENDIX C

## NOAA FISHERIES SERVICE
## COORDINATION LETTER

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
http://sero.nmfs.noaa.gov

March 27, 2014 F/SER46/RH:jk
225/389-0508

Ms. Joan M Exnicios, Chief
Regional Planning and Environmental Division South
New Orleans District Environmental Branch
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Ms. Exnicios:

By letter dated March 25, 2014, NOAA's National Marine Fisheries Service (NMFS) responded to your March 11, 2014, letter pertaining to our comments on the Draft Feasibility Study with Integrated Environmental Impact Statement for the Calcasieu Lock, Louisiana, project. In that letter, NMFS indicated we were unable to concur with a determination the project, as revised, would adequately address the essential fish habitat (EFH) conservation recommendations included in our November 25, 2013, letter on the draft environmental impact statement (EIS) for the project. The basis for that lack of concurrence was the fact we were not in receipt of a mitigation plan or beneficial use of dredged material plan which would ensure adverse impacts to ten acres of brackish marsh would be fully offset.

By electronic mail dated March 27, 2014, from staff of the New Orleans District, NMFS received a document titled "Appendix I, Mitigation Plan" which transmitted a revised document having many of the missing requirements of a mitigation plan referenced in our March 25, 2014, letter. Staff of NMFS have reviewed this Mitigation Plan and believe inclusion of the document into the final EIS and incorporation of a commitment into the Record of Decision to ensure at least 15 acres of marsh was created would adequately address our EFH conservation recommendation on this project. Assuming this occurs, NMFS believes the project revisions adequately address the EFH Conservation Recommendation included in our November letter and does not object to project implementation.

We appreciate the coordination efforts of the New Orleans District staff on resolving the issues related to this project.

Sincerely,

Virginia M. Fay
Assistant Regional Administrator
Habitat Conservation Division

c:
NOD, Leroux
FWS, Lafayette, Walther
EPA, Dallas, Keeler
LA DNR, Consistency, Haydel
F/SER46, Swafford
Files

# CALCASIEU LOCK LOUISIANA
# FEASIBILITY STUDY

## APPENDIX D

## CLEAN WATER ACT
## SECTION 404(b)(1) EVALUATION

**CALCASIEU LOCK LOUISIANA**
**FEASIBILITY STUDY**

# APPENDIX D
# CLEAN WATER ACT
# SECTION 404(b)(1) EVALUATION

# CALCASIEU LOCK LOUISIANA
# FEASIBILITY STUDY

## APPENDIX D
## CLEAN WATER ACT
## SECTION 404(b)(1) EVALUATION

### I. INTRODUCTION

**A. Purpose and General Description.** The *Calcasieu Lock, Louisiana Feasibility Study* (Study) addresses navigation improvement planning for the Gulf Intracoastal Waterway (GIWW) at and in the vicinity of Calcasieu Lock, Calcasieu Parish, LA. This Study was developed from the results of the GIWW Locks, Louisiana Reconnaissance Report, completed in May 1992. The Report involved a systems analysis of the GIWW locks west of the Mississippi River. It documented the need for replacements or improvements at Bayou Sorrel, Calcasieu, and Port Allen locks. This resulted in a 905(b) Reconnaissance Report specifically for Calcasieu Lock that was completed in 2001 and which found justification and Federal interest in further feasibility level study of the navigation delays and potential solutions at Calcasieu Lock. The principal problem to be addressed is the delays to navigation induced through operation of the Calcasieu Lock for drainage of the Mermentau River Basin as part of its authorized purpose. The primary opportunities are to reduce or eliminate commercial traffic delays and improve the national and regional economic conditions. The need to maintain the effectiveness of Calcasieu Lock as a salinity barrier for the Mermentau Basin is critical.

**B. Location.** Calcasieu Lock is located on the GIWW, just east of the Calcasieu River, in Calcasieu Parish, LA, approximately 10 miles south of Lake Charles, LA (figure D-1). Calcasieu Lock is a critical component of the LA portion of the GIWW, along with its location in the Chenier Plain and being the junction of the Mermentau and Calcasieu River Basins.

The Calcasieu River and Pass Ship Channel is located in southwest Louisiana in Calcasieu and Cameron Parishes, extending from Lake Charles, LA, southward into the Gulf of Mexico. The existing Calcasieu River and Pass Navigation project provides deep-draft navigation access to oil refineries, chemical plants, liquefied natural gas plants, and other facilities along the Calcasieu River.

The Calcasieu River and Pass Ship Channel project provides a 35- to 40-foot project depth channel from deep water in the Gulf of Mexico. The gulf reach of the channel is 42 feet deep, 800 feet wide, and it extends about 32 miles from the minus 42-foot Mean Low Gulf (MLG) contour to the Gulf shore. A 40- by 400-foot channel extends from the gulf shoreline about 34 miles upstream to the wharves of the Port of Lake Charles, and a 35- by 250-foot channel that extends further upstream another 2 miles to the vicinity of the Interstate 10 bridge in Lake Charles, LA. Turning basins are located at Mile 29 and Mile 36.

Construction of the Calcasieu Lock largely halted CSC-induced saltwater intrusion into the Mermentau Basin via the GIWW. At the same time, deepening of the CSC increased tidal amplitude, resulting in higher high tides and lower low tides. Thus, when the tide ebbs, a greater head differential is established on either side of the Calcasieu Lock. This increase in head resulted in a more efficient drainage pathway for Mermentau River freshwater inflows because the drainage potential is so much greater there than at the Catfish Point Control Structure, where drainage opportunity is very limited.

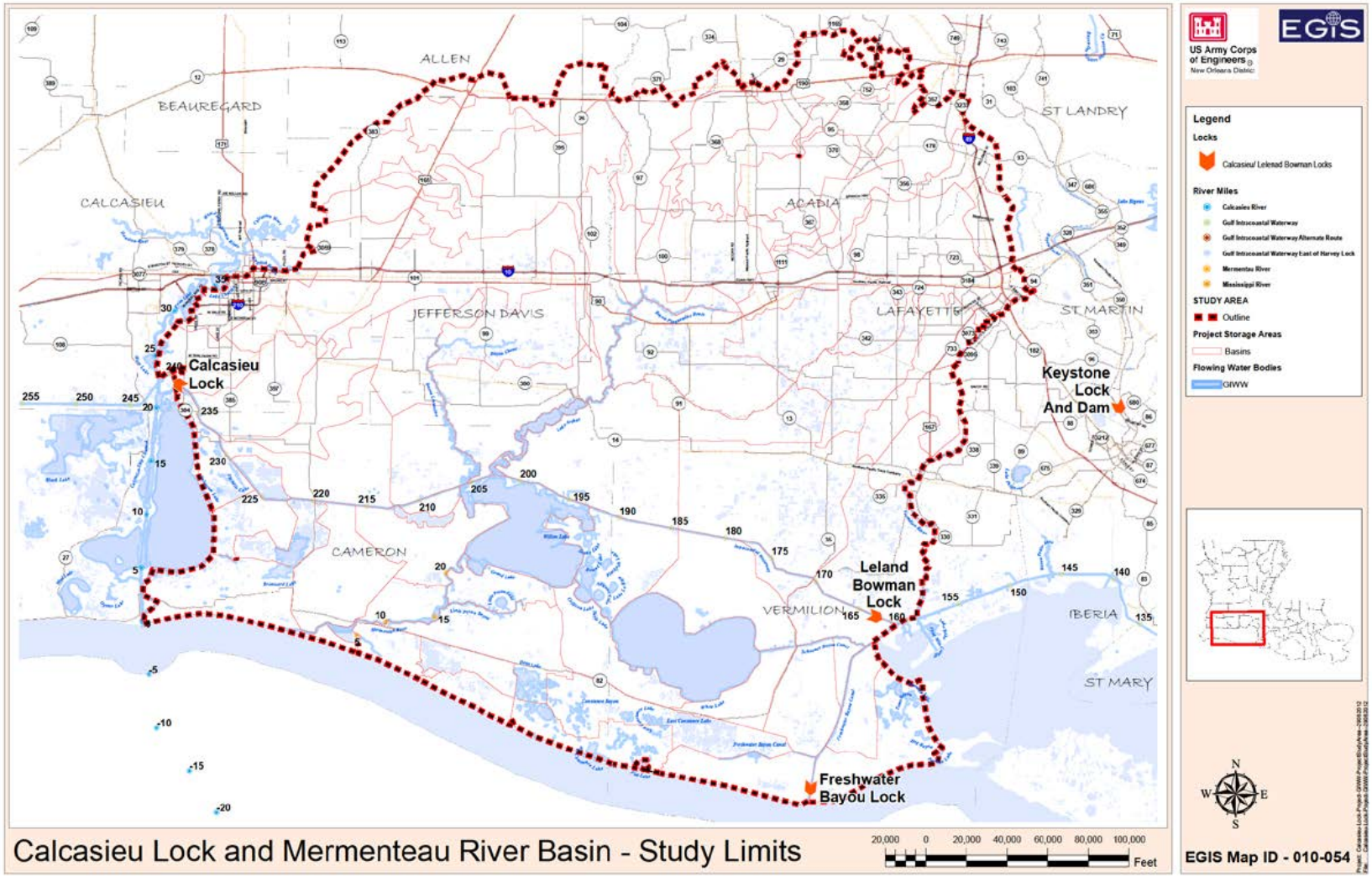



**Figure D-1.** Calcasieu Lock Study Area

Calcasieu Lock (photograph D-1) is located at the intersection of the Calcasieu River and Mile 238 of the GIWW. It serves as a barrier preventing saltwater intrusion from the Calcasieu River from entering the rice-growing areas of the Mermentau Basin via the GIWW. It is also provides flood risk management benefits when used to drain the Mermentau Basin after storm events. It operates in conjunction with the Leland Bowman Lock and the Catfish Point and Schooner Bayou control structures.

**Photograph D-1.** Aerial View of Calcasieu Lock

**C. Authority.** Authorization for the GIWW originally occurred in 1925 and has been modified and supplemented numerous times since then. The Calcasieu Lock was authorized as part of the *Mermentau River, Louisiana Flood Control, Irrigation and Navigation Project* (Mermentau Project) in the River and Harbor Act of 24 July 1946, Public Law No. 525, 79th Congress, 2nd Session, in accordance with the plan outlined in Senate Document No. 231. This document recommended modification of the existing project for the GIWW to provide for a salt water guard lock in the waterway. The document included other closely related improvements for flood control, navigation and salt water intrusion in the Mermentau River and Basin. The plan of improvement pertaining to the GIWW as contained in the project document is as follows:

> *"Gulf Intracoastal Waterway. An earth-chambered salt water guard lock, 425 by 75 by 12 feet, at or near Grand Lake Ridge, Mile 231 west of Harvey Lock."*

The Study is being performed by the US Army Corps of Engineers (Corps), New Orleans District (MVN), under the authority of the following resolutions:

> *A resolution at the request of Senators Long and Edwards of Louisiana, adopted by the Committee on Public Works of the United States Senate on September 29, 1972, that the "Board of Engineers for Rivers and Harbors, be, and is hereby, requested to review the reports on the Gulf Intracoastal Waterway (Louisiana-Texas Section, including the Morgan City-Port Allen Route) submitted in House Document 556, 87th Congress, Second Session, and subsequent reports, with a view to determining the advisability of modifying*

*the existing project in any way at this time, particularly with regard to widening and deepening the existing and/or authorized channel."*

*A resolution at the request of Congressman Jack Brooks of Texas, adopted by the Committee on Public Works of the United States House of Representatives on October 12, 1972, that the "Board of Engineers for Rivers and Harbors, be, and is hereby, requested to review the reports on the Gulf Intracoastal Waterway (Louisiana-Texas Section, including the Morgan City-Port Allen Route) submitted in House Document 556, 87th Congress, second session, and subsequent reports, with a view to determining the advisability of modifying the existing project in any way at this time, particularly with regard to widening and deepening the existing and/or authorized channel."*

**D. Proposed Project**

**Alternative 1 (Recommended Plan).** The Recommended Plan provides for the movement of flows from drainage events out of the Mermentau Basin consistent with the authorized purpose of the project. The project features are displayed in figure D-2, and are described as follows.

**Dredging.** A new channel will carry freshwater flows from the Mermentau Basin around the south side of the existing Calcasieu Lock to Bayou Choupique. This channel, constructed by hydraulic dredging, will be about 3,650 feet long and 200 feet wide at the top. The channel will be dredged to -12 NAVD 88, with a channel bottom width of 120 feet, and 1V on 3H side slopes. The channel will transition to -6.0 NAVD 88, with a channel bottom width of 150 feet at the structure. The transition will occur over 600 ft east and west of the structure at a 1V on 100H slope. Approximately 233,000 cy of dredged material will be generated from construction of the channel. Dredged material will be placed within the project area in areas of open water totaling about 50 acres. Placement of dredged material into these disposal sites is intended to convert open water to estuarine marsh. For disposal of dredged materials, a pipeline will be routed through the existing open water using floating and/or submerged pipeline.

**Culvert Structure.** A gated water control structure will be constructed inside the channel to control the passage of freshwater flows. The culvert structure consists of seven openings (9' x 14' each) that will allow for the passage of the additional flow. The structure is a pile-founded reinforced concrete box culvert with stainless steel sluice gates. The sluice gates will remain in the open position to drain the Mermentau Basin and can be closed when salinity levels in the Ship Channel exceed the allowable limits. The structure foundation consists of 50-ft long pre-stressed concrete piles. The structure is 114-feet wide and 110-feet long. The invert of the structure is (-)6.0, with the top of the culvert structure at (+)5.0. The top of the gate tower is at (+)14.0 NAVD88. The top of the culvert is higher than the anticipated flow line thru the area, so water cannot overtop the structure. The structure is placed in an area along the by-pass channel where the natural ground is above elevation (+)4.0 NAVD88, so water cannot flank the structure during drainage events. Trash screens will be provided to prevent large debris from clogging the culverts, which can prevent the gates from fully closing.

Riprap will be placed 200-feet on either side of the structure, only on the side slopes of the inflow and outflow channels. 50-feet of riprap will be placed on either side of the structure, along the channel bottom. Steel bulkheads (stoplogs) will be provided so the structure can be dewatered for maintenance purposes. The bulkheads can be placed on either side of the gate tower to isolate the area from the rest of the structure. The sluice gates have electric motors that will be operated either locally at the

structure, or remotely at the Calcasieu Lock. Closed-circuit cameras will be provided at the structure for lock personal to inspect the gate operations. Therefore, there is no requirement to man the structure during events in which the structure is opened. Timber pile clusters will be constructed where the by-pass channel intercepts the GIWW and Bayou Choupique. The clusters are provided to prevent barge access into the by-pass channel.

**Dredged Material Placement for Marsh Creation/Restoration.** Dredged material obtained from construction of the new channel will be placed within the project area in several areas of open water totaling about 50 acres. This dredged material will be used to restore degraded brackish marsh and create brackish marsh from shallow open water. These disposal sites are least-cost, environmentally acceptable placement alternatives that will contribute to a sustainable environment while providing placement capacity for the dredged material. Benefits from the approximately 50 acres of dredged material placement will more than offset the unavoidable direct impact to about 14 acres of brackish marsh from construction of the new channel. Therefore, no compensatory mitigation is part of the Recommended Plan for effects to brackish marsh. Monitoring and adaptive management of dredged material placement sites are included as part of the Recommended Plan, and will be conducted to ensure that brackish marsh benefits offset losses.

These features will consist of placement of about 233,000 cys of dredged material (including an estimated 1 ft of overdepth) into three disposal locations adjacent to the new channel and south of Black Bayou. The assumed existing elevation for the disposal locations is -1.5 to -2.0 NAVD 88, with an initial slurry elevation of +3.5 NAVD88 to achieve a final target elevation of +1.5 NAVD 88. To contain dredged material at these locations, earthen closures and weirs will be constructed around all disposal sites. All borrow material needed for closures and weirs will come from within the disposal sites. About 7,300 LF of earthen closures (7.5 cy/lf) will be constructed to elevation +5.0 NAVD 88, with a 5-foot crown, and 1V on 4H side slopes. About 16,500 LF of earthen weir containment (3.8 cy/lf) will be built along the existing marsh to elevation +3.0 NAVD 88, with a 5-foot crown, and 1V on 4H side slopes.

**Compensatory Mitigation.** A compensatory mitigation plan for project impacts has been developed to offset unavoidable losses from construction of the new channel to 11.5 acres of forested spoil bank habitat and is included as part of the Recommended Plan. The recommended mitigation plan will compensate for the Recommended Plan's losses in forest biological function and function by implementing tree stand improvements in about 15 acres of remaining forested habitat, plus the purchase of 9 acres of credits from an approved bottomland hardwood mitigation bank serving the project area. The amount of recommended mitigation was determined by the Coastal Chenier/Ridge WVA model and is the amount of forest that will need to be enhanced and restored to compensate for the mitigation target of 7 AAHUs. Monitoring and adaptive management of the on-site mitigation area are included as part of the Recommended Plan, and will be conducted to ensure that forest benefits are realized.

**Access/Staging.** A 10-ft wide access road will be constructed from the Lock to the culvert structure for use by the Lock personnel. An access area and staging area will be established during construction in the vicinity of the access road. The project is anticipated to occur during 2016-2017, with project completion by 2018. It is presumed that once construction has commenced, work will occur throughout the year, and not on a seasonal basis, to the extent practicable.

**E. General Description of Dredged and Fill Material**

**1. General Characteristics of Material.** Material to be dredged consists of natural coastal marsh substrate or sediments, as well as dredge spoil material that was deposited on the south side of Calcasieu Lock when the lock was originally constructed. Marsh material is predominantly organic and fat clays. The dredge spoil likely includes a greater proportion of silts and sands. The Corps' *Definite Project Report*, Calcasieu Lock dated Feb 1949 characterizes soils at the lock site from the surface to -13.0 feet as consisting of alternate layers and lentils of clay sand, sandy clay, silty clay, clay silt, and silty sand. Material used for construction of earthen closures and weirs at dredge disposal locations would come from within the disposal areas. Riprap would be used to protect the new channel bottom on either side of the water control structure. Concrete would be used to construct the water control structure.

**2. Quantity of Material.** The action would require 233,000 cubic yards of earthen material obtained by hydraulic dredging, 17,200 tons of rip rap, about 4,000 LF of earthen closures (8.6 cy/lf), about 16,500 LF of earthen weir containment (2.5 cy/lf), and an undetermined amount of concrete (cy).

**3. Source of Material..** All dredge material and earthen material used for containment weirs and dikes would come from within the project area. Rip rap and concrete would be supplied by off-site commercial sources.

**F. Description of the Proposed Discharge Sites**

**1. Location and Size.** All 233,000cubic yards of material would be placed into 50 acres of open water disposal sites adjacent to the new channel to restore and create brackish marsh. These sites are in the vicinity of the new channel or in an open water location about one mile southwest of the lock (figure D-2). Rip rap would extend about 300 feet from either side of the water control structure and across the new channel bottom, which would be 80 feet wide.

**2. Type of Site.** Open water

**3. Type of Habitat.** Open water and degraded brackish marsh

**4. Timing and Duration of Discharge.** The work is anticipated to occur during 2016-2017, with project completion by 2018. It is presumed that once construction has commenced, work would occur throughout the year, and not on a seasonal basis, to the extent practicable. Construction activities would be subject to seasonal restrictions if any Bald Eagle nest or nesting area of the Brown Pelican or other colonial waterbirds were encountered in the project area prior to project commencement.

**G. Description of Disposal Method.** Dredged material would be deposited through a dredge pipe. At the disposal sites, a hydraulic dredge would be used to discharge slurry into shallow water areas and degraded marsh areas. The assumed existing elevation for the disposal locations is -1.5 to -2.0 MLG, with placement to +1.5 MLG, which is assumed to be the elevation of existing adjacent marsh. Slurry would be discharged to an elevation of 3.5 MLG, which is assumed conducive to the development of wetlands habitat following dewatering and compaction. Material would be allowed to overflow over existing emergent marsh vegetation within the disposal areas. Earthen containment dikes and weirs would be used to contain dredged material. Dikes consist of a minimum 5-foot crown width and slopes no steeper than 1V to 4H. Dikes and weirs would be allowed to degrade naturally and would be breached and/or degraded within 3 years following construction to provide fisheries access if they do not sufficiently degrade following settlement of dredged material.

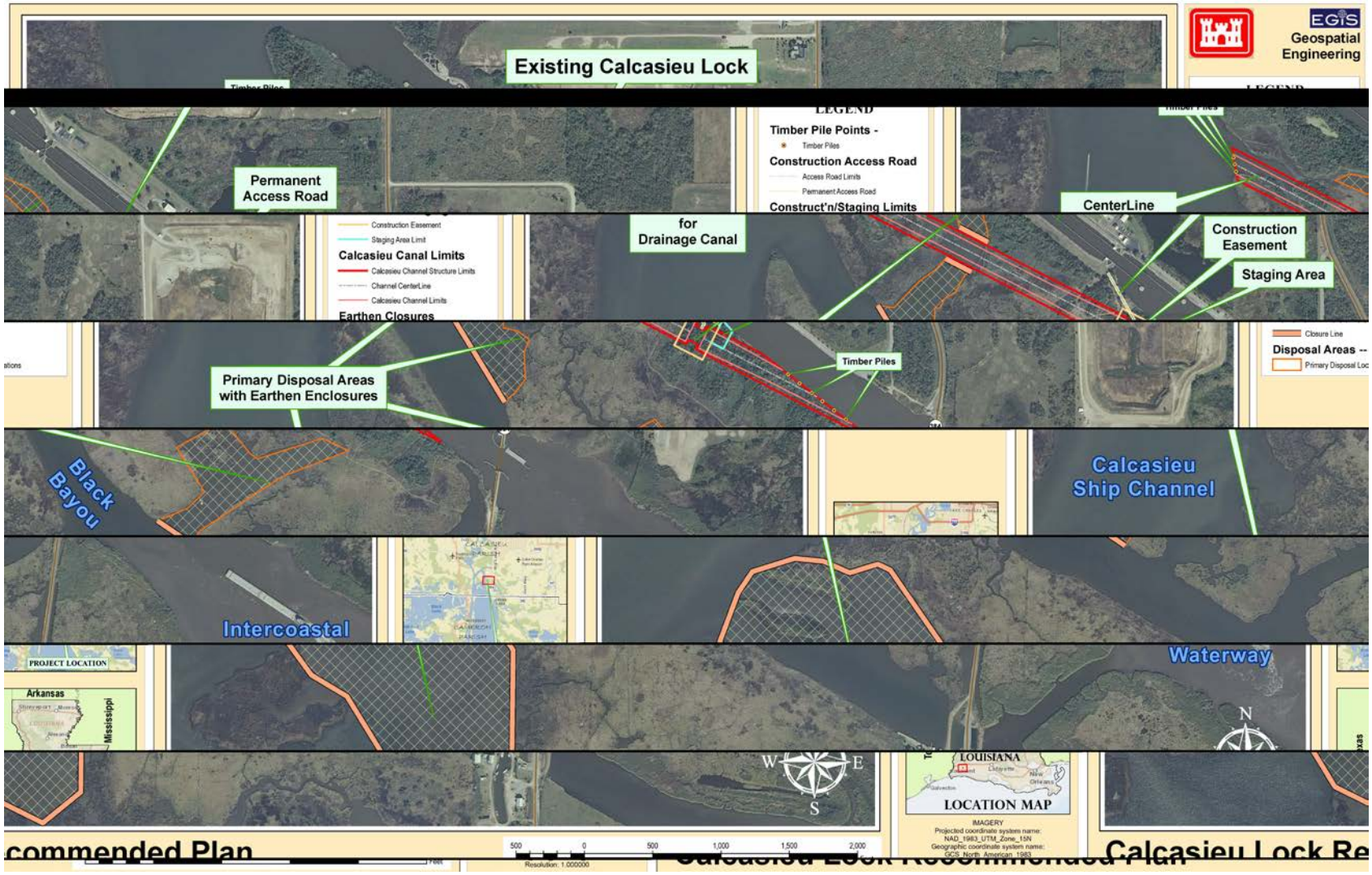



**Figure D-2.** Location of Recommended Plan's Disposal Sites (Areas for Marsh Restoration and Creation)

## II. FACTUAL DETERMINATIONS

### A. Physical Substrate Determinations

**1. Comparison of Existing Substrate and Fill.** Dredge activities consist of the creation of a new water conveyance channel to elevation -12 MLG for purposes of improving fresh water delivery. This channel would be installed through areas classified as open water, brackish marsh and upland forested habitats. The existing substrate material is primarily organic and fat clays to a 4 foot depth. This fill overlies swamp deposits composed of stiff to very stiff oxidized clays interbedded with layers and lenses of silts and sands are found beneath the swamp deposits.

**2. Changes to Disposal Area Elevation**. The assumed existing elevation for the disposal locations is -1.5 to -2.0 MLG, with placement to +1.5 MLG. Generally the disposal of dredge material would increase elevations in these areas from about 1to 3.5 feet. Dredging would reduce ground or substrate elevations in the newly created channel (bottom elevation, -12 MLG) by 10 to 20 feet along its 3,650 ft length. The crown elevations of earthen closures and weirs would be constructed above +1.5 MLG (+5.0 MLG and +3.5 MLG, respectively). Dikes and weirs would be allowed to degrade naturally and would be breached and/or degraded within 3 years following construction.

**3. Migration of Fill.** Dredged material placed for marsh restoration and creation would be contained within confinement dikes and weirs and is not expected to shift or move. Confinement dikes would be allowed to degrade naturally following the settlement of dredged material. If confinement dikes do not sufficiently degrade to provide fisheries and tidal ingress/egress following settlement of dredged material, they would be mechanically breached and/or degraded.

**4. Duration and Extent of Substrate Change.** The restoration project would cause temporary changes, due to construction and dredging, and permanent changes, as a result of construction of the new channel and disposal of dredged material to restore marsh. Substrate would be permanently altered in the locations of the new channel and disposal sites. These features are essential to fulfill project objectives.

**5. Changes to Environmental Quality and Value.** With no action, there would be no net change in environmental quality. Navigation would continue to be hampered by drainage flows through the Calcasieu Lock.

The action would have an initial negative direct impact on existing wetland vegetation (brackish marsh), upland vegetation (forested spoil bank), wildlife and fisheries resources, and essential fish habitat within the construction footprint. However these effects would be temporary and no permanent effects would be expected because of compensatory mitigation for the forested spoil bank habitats affected. Additionally the new channel would operate to maintain the same drainage levels as currently provided by the existing lock, thus freeing the lock to be used for navigation more often, and improving the drainage of the Mermentau Basin. The project is anticipated to contribute towards achieving and sustaining a larger coastal ecosystem that can support and protect the environment, economy, and culture of southern Louisiana and thus contribute to the economy and well-being of the Nation.

**6. Actions to Minimize Impacts.** The selected features have been designed to work with the natural, fluid, soft environment of coastal Louisiana. Direct wetland impacts have been minimized to the extent possible while striving to accomplish project objectives. As previously stated, one of the

project goals is to maintain freshwater circulation and redistribution within the study area while improving navigation passage. Drainage levels would not be altered because the new channel and structure would be operated to provide the same drainage level as the existing Calcasieu Lock provides. Material hydraulically dredged to construct the new bypass channel would be used to fill open water areas on site in order to serve the dual purpose of restoring brackish marsh and making a more effective channel. For the Recommended Plan, the beneficial effects of the dredged material would be used to offset the loss of 14 acres of brackish marsh habitat. Forested spoil bank mitigation would include implementation of tree stand improvements in about 15 acres of remaining forested habitat, plus the purchase of about 9.1 acres of credits from an approved bottomland hardwood mitigation bank serving the project area. Impacts associated with construction of features may include: increased total suspended solids and turbidity, increased dissolved nutrient levels, mobilization of existing contaminants in sediments, and decreases in dissolved oxygen levels. These impacts would be minimized, as much as practicable, through the implementation of stormwater pollution prevention plans (SWPPPs) and other applicable best management practices (BMPs). Impacts associated with soil compaction, rutting, rill, and gully erosion at surface alteration construction sites would be kept to a minimum by use of proper construction techniques such as silt curtains, temporary vegetative cover during construction, and re-grading and permanent vegetation establishment at the end of construction.

### B. Water Circulation, Fluctuation, and Salinity Determinations

**1. Alteration of Current Patterns and Water Circulation.** Major flow channels within the project area are the Calcasieu River Ship Channel (CSC) and the GIWW. The Calcasieu Lock currently maintains the salinity barrier between the GIWW and Mermentau Basin. At the same time, deepening of the CSC increased tidal amplitude, resulting in higher high tides and lower low tides. Thus, when the tide ebbs, a greater head differential is established on either side of the Calcasieu Lock. This increase in head resulted in a more efficient drainage pathway for Mermentau River freshwater inflows because the drainage potential is so much greater there than at the Catfish Point Control Structure, where drainage opportunity is very limited. The increase in head results in flow too dangerous for navigation traffic to lock through. The project would create a new channel that would be used in conjunction with a gated structure to manage this drainage and reduce head at the lock thus enabling safe navigation through the lock more frequently. It would change the current patterns and water circulation at a localized level, shifting the drainage channel just south of the Calcasieu Lock.

**2. Interference with Water Level Fluctuation.** There would be no expected change in stage with the action. The new channel would be used to manage drainage to the same levels as currently done with the Calcasieu Lock.

**3. Salinity Gradient Alteration.** There would be no expected change in salinity gradients with the action. The new channel would be used to manage drainage to the same levels as currently done with the Calcasieu Lock.

**4. Cumulative Effects on Water Quality**

**a. Salinity.** There would be no expected cumulative change in salinity levels with the action. The new channel would be used to manage drainage to the same levels as currently done with the Calcasieu Lock.

**b. Clarity.** There would be no expected cumulative change in clarity with the action. The new channel would be used to manage drainage to the same levels as currently done with the Calcasieu Lock.

**c. Color.** There would be no expected cumulative change in color with the action. The new channel would be used to manage drainage to the same levels as currently done with the Calcasieu Lock.

**d. Water Chemistry and Dissolved Gasses.** There would be no expected cumulative change in water chemistry with the action. The new channel would be used to manage drainage to the same levels as currently done with the Calcasieu Lock.

**e. Temperature**. There would be no expected cumulative change in water temperature with the action. The new channel would be used to manage drainage to the same levels as currently done with the Calcasieu Lock.

**f. Nutrients.** There would be no expected cumulative change in nutrient levels with the action. The new channel would be used to manage drainage to the same levels as currently done with the Calcasieu Lock.

**5. Changes to Environmental Quality and Value.** There would be no expected change in environmental quality and value with the action. The new channel would be used to manage drainage to the same levels as currently done with the Calcasieu Lock.

**6. Actions Taken to Minimize Impacts.** The future quality of Louisiana's coastal waters depends on a responsible, watershed approach to managing these activities. There are a number of present and future activities that would continue to occur without the actions of the project and would affect surface water quality conditions in the coastal plain of Louisiana. Although there are Federal, state and local regulations in place to ensure protection of Louisiana's public health and natural resources, water quality conditions would likely improve with the programs in place. There are also Federal, state, local, and private ecosystem restoration projects being studied and undertaken to improve water quality conditions within the coastal area.

However, there are some activities that may potentially have negative effects on water quality and would continue to occur with or without the project.

- Industrial, commercial, and residential development along the coast. With this activity comes increased point and nonpoint source pollution from sources such as wastewater treatment facilities and urban runoff from new development. Also, activities associated with maintaining and improving navigation along the coast would continue to occur.

- Flood damage reduction projects would continue to be planned, designed, and constructed especially in areas highly susceptible to flood damages due to hurricanes and tropical storm events. With these activities, more alterations to the hydrology of the coast would potentially occur leading to areas of degraded water quality. Some projects, such as the Morganza to the Gulf Hurricane Protection Project, are incorporating resource sustainable design techniques that may aid in protecting significant resources such as surface waters of the state.

- The most notable activity that would continue to occur without the Calcasieu Lock plan is the ongoing erosion/subsidence or land loss of the coastal areas. This would continue to unearth the expansive oil and gas infrastructure along the coast of Louisiana. This would be a precarious situation, especially during storm events and within navigable waterways. Exposed pipelines are vulnerable to navigation vessels striking them, which could lead to discharges into the Gulf of Mexico as well as other coastal water bodies. In the event of discharges, extensive ecological damage would probably occur. The owner(s) of the infrastructure could incur expensive fines and cleanup costs and vessel operators could be seriously injured. There are other forms of infrastructure that could potentially be exposed due to coastal erosion including wastewater collection systems and other commercial industry related systems.

Potential impacts associated with surface alteration sites would be minimized, as much as practicable, through the implementation of SWPPPs and other applicable BMPs. Impacts associated with soil compaction, rutting, rill, and gully erosion at surface alteration construction sites would be kept to a minimum by use of proper construction techniques such as silt curtains, temporary vegetative cover during construction, and regrading and permanent vegetation establishment at the end of construction. The occurrence of increased turbidity in the project area waters would be temporary and minor.

## C. Suspended Particulate / Turbidity Determinations

**1. Alteration of Suspended Particulate Type and Concentration.** Short-term direct impacts associated with construction of features could include increased total suspended solids and turbidity. These impacts would be minimized, as much as practicable, through implementation of appropriate Best Management Practices. Any increases in suspended solids and turbidity levels due to dredging related activities in the immediate project area would be minor, temporary, and highly localized. There would be no permanent impacts to suspended solids or turbidity.

**2. Particulate Plumes Associated with Discharge.** Any minor increases in suspended sediment and turbidity levels during dredge disposal would be temporary and highly localized. Minor reductions in dissolved oxygen levels associated with dredged material deposition would be temporary. Potential impacts associated with surface alteration sites would be minimized, as much as practicable, through the implementation of SWPPPs and other applicable BMPs. Impacts associated with soil compaction, rutting, rill, and gully erosion at surface alteration construction sites would be kept to a minimum by use of proper construction techniques such as silt curtains, temporary vegetative cover during construction, and regrading and permanent vegetation establishment at the end of construction.

**3. Changes to Environmental Quality and Value.** Increases in suspended solids and turbidity are expected to be a temporary result of construction activities that would return to normal levels after construction completion. No permanent change to environmental quality or values would be expected.

**4. Actions to Minimize Impacts.** Construction operations are expected to temporarily increase the concentration of suspended particulates. Particulates suspended during project

construction would dissipate after construction activities are complete. Temporary increases in suspended particulates would be minimized as much as possible through BMPs such as creating containment berms, use of silt fencing, silt curtains, and seeding, to prevent the unnecessary transport of sediments within the construction and placement areas.

**D. Contaminant Determinations.** As reported in the Phase I ESA (Appendix M, *Hazardous, Toxic and Radioactive Waste*), during records research and site reconnaissance it was determined that no HTRW materials or RECs were observed or discovered at the sites of the alternatives or adjacent properties. Should at anytime during the project HTRW concerns arise, USACE would take immediate actions to investigate the concerns. Should an HTRW issue be determined and the development of a response action required, USACE would coordinate with the appropriate Federal and state authorities to implement an approved response action.

Consistent with ER 1165-2-132, an HTRW investigation of the project area was conducted. Based upon findings from this investigation, the potential for direct impacts to the project area from implementation of the action would be low and would likely continue to be low into the future.

Existing contaminants in sediments from the Calcasieu River and Calcasieu Lake may have been mobilized into the project area. Such contaminants include primarily trace metals and hydrophobic organic compounds. Such contaminants could be suspended during construction activities. However, they are not expected to occur within the project area in such quantities that they would impair water quality or be harmful to humans, fish, or wildlife.

**E. Aquatic Ecosystem and Organism Determinations**

**1. Effects on Plankton.** No permanent impact to plankton is expected with the action. Drainage and flows would be maintained at current levels. During actual construction activities of project features there would only be short-term minor adverse impacts to plankton populations due to increases in turbidity, low dissolved oxygen, and introduction of dredged sediments into shallow open water areas.

**2. Effects on Benthos.** Smothering of non-mobile benthic organisms could occur during construction. These impacts would be minimized, as much as practicable, through implementation of appropriate Best Management Practices. Construction of features and dredging activities would destroy existing benthic communities at the construction sites. Colonization of neighboring disposal sites by benthos is expected after construction completion and would offset any loss as a result the construction of project features.

**3. Effects on Nekton.** Nekton comprise animals largely from three clades; vertebrates, mollusks, and crustaceans. Direct impacts to nekton from implementation of the action would result from construction of project features. Impacts from construction of the channel and water control structure may include direct mortality due to burial; injury or mortality due to increased turbidity (e.g. gill abrasion, clogging of feeding apparatus); modified behavior, and short-term displacement. Dredging and placement of borrow material associated with dikes, weirs, and marsh creation would negatively impact benthic organisms and benthic feeders in dredge channels and disposal areas. Sessile and slow-moving aquatic invertebrates would be disturbed by the dredge activity or buried by the placed material. Construction activities would temporarily increase turbidity, temperatures, and

biological oxygen demand (BOD), and decrease dissolved oxygen. These temporary conditions would likely displace more mobile nekton from the construction area. Following construction, displaced nekton would likely return to the project area and colonize the disposal areas.

**4. Effects on the Aquatic Food Web.** Louisiana's coastal wetlands are the richest estuaries in the country for fisheries production. Commercially and recreationally important species such as brown and white shrimp, blue crabs, eastern oysters, and menhaden are abundant. Louisiana has historically been an important contributor to the Nation's domestic fish and shellfish production, and is one of the primary contributors to the Nation's food supply for protein. While Louisiana has long been the Nation's largest shrimp and menhaden producer, it has also recently become the leading producer of blue crabs and oysters.

Phytoplankton are the primary producers of the water column, and form the base of the estuarine food web. Zooplankton provide the trophic link between the phytoplankton and the intermediate level consumers such as aquatic invertebrates, larval fish, and smaller forage fish species (Day et al. 1989). Although temporary direct impacts would occur through construction of project features, conditions for the aquatic food web are expected to return to current levels after construction is completed.

**5. Effects on Threatened and Endangered Species.** Federally listed threatened and endangered or candidate species known from Calcasieu and Cameron parishes that may occur in the project area include: American Alligator (*Alligator mississippiensis*), Green sea turtle (*Chelonia mydas*), Gulf Sturgeon (*Acipenser oxyrinchus desotoi*), Hawksbill sea turtle (*Eretmochelys imbricata*), Kemp's Ridley sea turtle (*Lepidochelys kempii*), Leatherback sea turtle (*Dermochelys coriacea*), Loggerhead sea turtle (*Caretta caretta*), Piping Plover (*Charadrius melodus*), West Indian Manatee (*Trichechus manatus*), and Sprague's pipit (*Anthus spragueii*). No adverse effects are expected to occur to any of these species, as described in Appendix A, Biological Assessment.

**6. Effects on Other Wildlife.** Direct adverse impacts to wildlife resources would primarily result from construction activities associated with the various features of the action. Construction of the new channel associated with the Recommended Plan would result in the loss of 11.5 acres of forested spoil bank and 14 acres of brackish marsh. Some wildlife species could be temporarily displaced from these areas as disturbance from construction activities could result in unfavorable conditions for nesting, foraging, and/or other activities. However, most species would move to an area with more favorable conditions and return after construction is completed.

Although nesting bald eagles are not known to occur in the project area, project implementation would follow the National Bald Eagle Management Guidelines. In order to minimize any potential impacts to bald eagle nests, the project area would be surveyed for nesting activity prior to any construction. The guidelines recommend:

- maintaining a specified distance between the activity and the nest (buffer area)
- maintaining natural areas (preferably forested) between the activity and nest trees (landscape buffers); and
- avoiding certain activities during the breeding season

In order to minimize any potential impacts to the brown pelican or other colonial nesting waterbirds that may be found in the project area, a qualified biologist would inspect the work site for

undocumented nesting colonies during the nesting season prior to construction. To minimize disturbance to colonial nesting waterbirds, the following restrictions on activity would be observed:

- for colonies containing nesting brown pelicans, all activity occurring within 2,000 feet of a rookery would be restricted to the non-nesting period (September 15 through March 31)
- for colonies containing nesting wading birds, anhingas, and/or cormorants, all activity occurring within 1,000 feet of a rookery would be restricted to the non-nesting period (September 16 through April 1)

In summary, the project would not have any lasting permanent effects on wildlife species.

**7. Actions to Minimize Impacts.** Formulation of project plans and designs, evaluation of alternative plans, and development of operational scenarios for the preferred alternative, have all been conducted with the objective of minimizing potential negative impacts to the aquatic ecosystem. Study alternatives were developed in accordance with Corps planning guidance at ER 1105-2-100 which directs that projects be designed to avoid the need for compensatory fish and wildlife mitigation. Formulation of project alternatives was conducted in compliance with this guidance. Compensation for the loss of 14 acres of impacted marsh caused by construction would consist of placing dredged material into 50 acres of open water adjacent to the new bypass channel to restore the four disposal areas to brackish marsh. For the loss of forested spoil bank upland habitat, the plan also calls for the implementation of forest management measures consisting of tree stand improvements within the remaining 15 acres of forest, as well as the purchase of about 8 credits from an approved bottomland hardwood mitigation bank serving the project area. The mitigation plan is described in Appendix I, Mitigation Plan.

**F. Proposed Disposal Site Determinations.** Discussions pertaining to turbidity and suspended particulates are summarized under Section II. C in this document. Contaminants were discussed previously under Section II. D of this Evaluation. Implementation of the project would have no significant adverse effects on municipal or private water supplies; recreational or commercial fisheries; water related recreation or aesthetics; parks; national monuments; or other similar preserves. Any adverse impacts would be minor and of short-term duration. Water Quality Certification under Section 401 of the Clean Water Act was issued for the project by the Louisiana Department of Environmental Quality on January 15, 2014.

**G. Determination of Cumulative Effects on the Aquatic Ecosystem.** Cumulative effects on the coastal ecosystem would primarily be related to the incremental impact of all past, present, and future actions affecting water quality within the Mermentau Basin such as: increase in fresh water areas; stabilization or decrease in salinities; increase in sediment introduction to the coastal zone, with accompanying minor increases in trace metals associated with bed sediments; increased total suspended sediments; increased turbidity; increased organic/nutrient enrichment of the water column; disturbance and release of possible contaminants; decrease in water temperatures along with fewer water temperature fluctuations; and increased dissolved oxygen levels. Likewise, there are no adverse alterations or destructions of unique or valuable habitats (except for brackish marsh, which the Louisiana Department of Wildlife and Fisheries regards as a rare (S3S4) natural community within the state), critical habitat for endangered species, important wildlife or fishery breeding or nursery areas, designated wildlife management or sanctuary areas, or natural forestlands. No adverse cumulative or

secondary impacts to the biological productivity of wetland ecosystems are anticipated. Adverse disruptions of coastal wildlife and fishery migratory patterns are not anticipated.

**H. Determination of Secondary Effects on the Aquatic Ecosystem.** The project is to replace the functions of the Calcasieu Lock of maintaining the salinity barrier and drainage patterns between the Mermentau Basin and the GIWW in order to allow more frequent use of the lock by navigation. This objective would be accomplished by designing a new channel and gated structure immediately south of the lock. The new bypass channel would have a gated water control structure located near its longitudinal center. This structure would facilitate the passage of freshwater flows from the Mermentau basin to the east, which supports extensive and diverse freshwater marshes. These marshes in general have experienced impeded interior drainage due to modified natural drainage patterns in the coastal zone, and as a result the natural productivity and diversity of these marshes has become impaired. With this water control structure, the project would indirectly improve the ecological integrity of the Mermentau basin's freshwater marshes.

Activities are not expected to contribute to degradation of the coastal marshes. Therefore, the project features associated with implementation of the preferred alternative would not result in significant adverse indirect impacts to water quality, threatened or endangered species, essential fish habitat, water bottoms, plankton, vegetation, wildlife, or fisheries.

## III. FINDINGS OF COMPLIANCE OR NON-COMPLIANCE WITH THE RESTRICTIONS ON DISCHARGE

A. No significant adaptations of the guidelines were made relative to this evaluation

B. No practicable alternatives to the discharges could be identified that would have less adverse impacts on the aquatic ecosystem.

C. Chemical constituents of the dredged material released during dredging and disposal operations are not expected to exceed Louisiana Water Quality Standards.

D. The action is compliant with the Endangered Species Act of 1973, as amended. The action would not significantly affect endangered or threatened species or their critical habitats.

F. The action is compliant with specified protection measures for marine sanctuaries designated by the Marine Protection, Research, and Sanctuaries Act of 1972. All disposal sites and effects are inland waters. No effects would occur in ocean waters beyond the shoreline of the Gulf of Mexico. The Recommended Plan will include protective measures to be implemented during construction for avoiding and minimizing impacts to marine mammals such as the manatee and dolphins.

G. Evaluation of Extent of Degradation of the Waters of the United States

1. Effects on Human Health and Welfare

a. Municipal and Private Water Supplies. Implementation of the Recommended Plan is not anticipated to have any direct impacts to drinking water supply or agricultural water use. The project would operate to maintain the current salinity drainage levels.

b. Recreational and Commercial Fisheries. Oyster seed beds, oyster leases, and commercial fishing does not currently occur within the project footprint. Recreational fishing is popular at the potential open water disposal site located to the southwest of the lock along the east shore of Calcasieu Lake, but less so at potential disposal sites within Black Bayou adjacent to the lock. Adverse effects to fishing opportunities related to construction activities would be temporary. Fishing opportunities would return upon construction completion.

c. Plankton. No permanent impact to plankton is expected with the action. Drainage and flows would be maintained at current levels. During actual construction activities of project features there would only be short-term minor adverse impacts to plankton populations due to increases in turbidity, low dissolved oxygen, and introduction of dredged sediments into shallow open water areas.

d. Fish. Impacts to fisheries would be temporary. Fish would be expected to leave the area of construction, but return upon project completion.

e. Shellfish. Permanent impacts to shellfish would not be expected from the action. Area conditions would be maintained to the same levels as pre-project conditions.

f. Wildlife. Wildlife is not expected to be impacted permanently by the project. Wildlife would be expected to leave the project area during construction, but return upon construction completion. All habitat losses would be mitigated on site.

g. Special Aquatic Sites. There are no special aquatic sites within the project area.

2. Effects on Life Stages of Aquatic Life and Other Wildlife Dependent on Aquatic Ecosystems. There are no long-term adverse effects associated with the discharge of fill on the life stages of aquatic life and other wildlife dependent on aquatic ecosystems within the project area. Impacts from dredging activities, disposals, and structural feature construction would be minimized, through the implementation of SWPPPs and other applicable BMPs. Impacts associated with soil compaction, rutting, rill, and gully erosion at construction sites would be kept to a minimum by use of proper construction techniques such as silt curtains, temporary vegetative cover during construction, and regrading and permanent vegetation establishment at the end of construction. Upon project completion, conditions are expected to return to pre-project levels.

3. Effects on Aquatic Ecosystem Diversity, Productivity and Stability. Construction of the Recommended Plan would result in short-term construction-related impacts within parts of the project area and would include some disturbance of fish and wildlife habitat. However, these impacts would be temporary and would occur only during construction, and are not expected to alter the long-term productivity of the natural environment.

4. Effects on Recreational, Aesthetic, and Economic Resources. Impacts to recreational and aesthetic resources would be a result of construction activities and would be temporary. They would return to pre-project conditions after construction completion. Economic resources would expect a positive impact because the project would reduce unsafe currents and allow navigation traffic to be able to use Calcasieu Lock on a more frequent basis.

H. Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem. As stated in Section II. E. (7) of this evaluation, formulation of project plans and designs, evaluation of alternative plans, and development of operational scenarios for the Recommended Plan, have all been conducted with the objective of minimizing potential negative

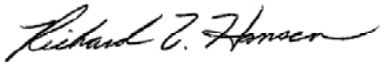
impacts to the aquatic ecosystem. Forested habitats impacted by construction of the project would be mitigated primarily on-site but also off-site at an approved mitigation bank located in the project area's watershed. Therefore, there are no unavoidable adverse impacts as a result of the implementation of reasonable alternatives for this project. Placement of material excavated for construction of project features was designed in the context of beneficial use, to be used for marsh creation which would directly benefit habitat for wildlife and fish in the immediate vicinity of construction, offsetting loss of marsh habitat because of construction.

## IV. EVALUATION RESPONSIBILITY

Evaluation Prepared By: Timothy K. George, Supervisory Ecologist, Regional Planning & Environmental Division North, St. Louis, USACE

Evaluation Reviewed By: Brian L. Johnson, Chief, Environmental Compliance Branch, Regional Planning & Environmental Division North, St. Louis, USACE

The Recommended Plan for the Calcasieu Lock Louisiana Feasibility Study which incorporates sites for dredging, excavation, disposal, and the placement of fill, complies with the requirement of guidelines, and includes appropriate and practicable methods to minimize adverse effects to the aquatic ecosystem.



Date: 28 March 2014
Richard Hansen
Colonel, US Army
Commander & District Engineer

BOBBY JINDAL
GOVERNOR

PEGGY M. HATCH
SECRETARY

# State of Louisiana

## DEPARTMENT OF ENVIRONMENTAL QUALITY
## ENVIRONMENTAL SERVICES

NOV 0 6 2013

U.S. Army Corps of Engineers- St. Louis District
Environmental Compliance Section (CEMVP-PD-C)
1222 Spruce Street
St. Louis, Missouri 63103-2833

Attention: Timothy George

RE: Water Quality Certification (WQC 131105-01/AI 101235/CER 20130001)
Calcasieu Lock Replacement Project
Cameron Parish

Dear Mr. George:

We have received notice of your application for a 401 Water Quality Certification to dredge waterbottoms & place fill and spoil materials for improvements to navigation and the existing lock structure, approximately 10 miles south of Lake Charles, Louisiana. Prior to processing the certificate, this office requires:

1. **A proof of publication of the Public Notice in THE ADVOCATE of Baton Rouge.**

2. **A proof of publication of the Public Notice in THE AMERICAN PRESS of Lake Charles.**

3. **A list of landowners, adjacent to the project site.**

Be sure to include our reference number (WQC 131105-01/AI 101235) on all responses. Please send all correspondence and your check or money order made payable to the Louisiana Department of Environmental Quality to the following address:

Louisiana Department of Environmental Quality
Water Permits Division
P.O. Box 4313
Baton Rouge, LA 70821-4313
Attn: Water Quality Certifications

Enclosed are copies of public notices to be published by you one time in the official State Journal, THE ADVOCATE of Baton Rouge and THE AMERICAN PRESS of Lake Charles. (As provided for by LRS 30:2074 A(3), the cost of this publication is to be at your expense).

PLEASE REQUEST THAT THESE NEWSPAPERS FURNISH US WITH PROOFS OF PUBLICATION OF THIS NOTICE TO THE FOLLOWING ADDRESS:

Louisiana Department of Environmental Quality
Water Permits Division
P.O. Box 4313
Baton Rouge, LA 70821-4313
Attn: Blake Perkins

A ten-day period after the date of publication will allow for public comment. After this ten-day period has expired, a decision as to whether to grant the certificate will be made in accordance with LAC 33:IX.1507.A-E and provisions of Section 401 of the Clean Water Act.

If we haven't received this information within 30 days from the date of this letter, your application will be considered inactive. If you have any questions, please call Blake Perkins at 225-219-3540.

Sincerely,

Scott Guilliams
Administrator
Water Permits Division

SG/bmp

c: Corps of Engineers- New Orleans District

PUBLIC NOTICE TO BE RUN IN

THE ADVOCATE OF BATON ROUGE
P.O. Box 588
Baton Rouge, LA 70821
Phone: 225-388-0128
Fax: 225-388-0164

Attn: Public Notices

Notice is hereby given that the Corps of Engineers- New Orleans District has applied for a 401 Water Quality Certification to dredge waterbottoms & place fill and spoil materials for improvements to navigation and the existing lock structure, approximately 10 miles south of Lake Charles, Louisiana. The applicant is applying to the Louisiana Department of Environmental Quality, Office of Environmental Services for a Water Quality Certification in accordance with statutory authority contained in the LAC 33:IX.1507.A-E and provisions of Section 401 of the Clean Water Act.

Comments concerning this application can be filed with the Water Permits Section within ten days of this notice by referencing WQC 131105-01/AI 101235 to the following address:

Louisiana Department of Environmental Quality
Water Permits Division
P.O. Box 4313
Baton Rouge, LA 70821-4313
Attn: Blake Perkins

A copy of the application is available for inspection and review at the LDEQ Public Records Center, on the first floor of the Galvez Building, Room 127 at 602 North Fifth Street Baton Rouge, LA 70802 from 8:00 a.m. to 4:30 p.m.

PUBLIC NOTICE TO BE RUN IN

THE AMERICAN PRESS OF LAKE CHARLES
P.O. Box 2893
Lake Charles, LA 70602
Phone: 337-433-3000
Fax: 337-494-4008

Attn: Public Notices

Notice is hereby given that the Corps of Engineers- New Orleans District has applied for a 401 Water Quality Certification to dredge waterbottoms & place fill and spoil materials for improvements to navigation and the existing lock structure, approximately 10 miles south of Lake Charles, Louisiana. The applicant is applying to the Louisiana Department of Environmental Quality, Office of Environmental Services for a Water Quality Certification in accordance with statutory authority contained in the LAC 33:IX.1507.A-E and provisions of Section 401 of the Clean Water Act.

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# CALCASIEU LOCK LOUISIANA
# FEASIBILITY STUDY

## APPENDIX E

## CONSISTENCY DETERMINATION

**CALCASIEU LOCK LOUISIANA**
**FEASIBILITY STUDY**

# APPENDIX E

# CONSISTENCY DETERMINATION



**FIGURES**

# CALCASIEU LOCK LOUISIANA
# FEASIBILITY STUDY

## APPENDIX E

## CONSISTENCY DETERMINATION

### I. INTRODUCTION

Section 307 of the Coastal Zone Management Act of 1972, 16 U.S.C. 1451 et. seq. requires that "each federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in a manner which is, to the maximum extent practicable, consistent with approved state management programs." In accordance with Section 307, a Consistency Determination has been prepared by the U.S. Army Corps of Engineers (USACE), New Orleans District (MVN) for the navigation improvement study for the Gulf Intracoastal Waterway (GIWW) at and in the vicinity of Calcasieu Lock, Calcasieu Parish, LA. The project area is within the state's designated coastal zone.

In addition to the navigation improvement, the action would require mitigation for forested spoil bank impacts pursuant to various requirements, including the Fish and Wildlife Coordination Act. Forested spoil bank mitigation would occur on-site as well as off-site at an approved mitigation bank. Placement of dredged material for the development of 50 acres of brackish marsh in shallow open water disposal sites would more than offset the loss of 14 acres of marsh associated with Alternative 1 (Recommended Plan). Coastal Use Guidelines were written in order to implement the policies and goals of the Louisiana Coastal Resources Program (LCRP), and serve as a set of performance standards for evaluating projects. Compliance with the LCRP, and therefore, Section 307, requires compliance with applicable Coastal Use Guidelines.

### II. PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the proposed action is to maximize the efficiency of the Calcasieu Lock thereby contributing to the overall efficiency of GIWW as a nationally significant navigation system, while continuing to provide water management capability and salinity control to the Mermentau River Basin. The primary objective of the proposed action is to reduce drainage event induced navigation delays at Calcasieu Lock while minimizing the impacts to the surrounding area. The principal problem to be addressed is the delays to navigation induced through operation of the Calcasieu Lock for drainage of the Mermentau River Basin as part of its authorized purpose. Navigation delays at Calcasieu Lock are primarily related to hydrologic conditions and how they affect the tonnage passing through the lock. The lock was constructed as a saltwater barrier, and it is operated to keep salt water from moving west to east into the Mermentau Basin, and to drain flood flows from east to west to the Calcasieu River. Delays can occur when there are excessive stages within the Mermentau Basin. During floods, the lock is frequently left open to drain water from the basin toward the Calcasieu River. During this situation, tows are forced to wait out the drainage event due to head differential in the lock chamber.

The primary opportunities are to reduce or eliminate commercial traffic delays and improve the national and regional economic conditions. The need to maintain the effectiveness of Calcasieu Lock as a salinity barrier for the Mermentau Basin is critical. The Calcasieu Lock serves as a barrier preventing saltwater

intrusion from the Calcasieu from entering the rice-growing areas of the Mermentau Basin via the GIWW. It is also provides flood risk management benefits when used to drain the Mermentau Basin after storm events. It operates in conjunction with Leland Bowman Lock and Catfish Point and Schooner Bayou control structures. While the problem and opportunities are localized physically at the lock, the range of alternatives has potential impacts at multiple scales.

Calcasieu Lock is located on the GIWW, just east of the Calcasieu River, in Calcasieu Parish, LA, approximately 10 miles south of Lake Charles, LA (figure E-1). Calcasieu Lock is a critical component of the LA portion of the GIWW, along with its location in the Chenier Plain and being the junction of the Mermentau and Calcasieu River Basins. Therefore the primary study area is the Lock and immediate vicinity; however a broader approach was taken in assessing environmental, economic and hydraulic conditions and potential impacts. Potential environmental impacts are localized in nature but given the dynamic coastal environment Calcasieu Lock is located in, the Chenier Plain sub region of the coast was evaluated.

The Calcasieu River and Pass Ship Channel is located in southwest Louisiana in Calcasieu and Cameron Parishes, extending from Lake Charles, LA, southward into the Gulf of Mexico. The existing Calcasieu River and Pass Navigation project provides deep-draft navigation access to oil refineries, chemical plants, liquefied natural gas plants, and other facilities along the Calcasieu River

The Calcasieu River and Pass Ship Channel project provides a 35- to 40-foot project depth channel from deep water in the Gulf of Mexico. The gulf reach of the channel is 42 feet deep, 800 feet wide, and it extends about 32 miles from the minus 42-foot Mean Low Gulf (MLG) contour to the Gulf shore. A 40- by 400-foot channel extends from the gulf shoreline about 34 miles upstream to the wharves of the Port of Lake Charles, and a 35- by 250-foot channel that extends further upstream another 2 miles to the vicinity of the Interstate 10 bridge in Lake Charles, LA. Turning basins are located at Mile 29 and Mile 36.

Construction of the Calcasieu Lock largely halted Calcasieu Ship Channel (CSC) -induced saltwater intrusion into the Mermentau Basin via the GIWW. At the same time, deepening of the CSC increased tidal amplitude, resulting in higher high tides and lower low tides. Thus, when the tide ebbs, a greater head differential is established on either side of the Calcasieu Lock. This increase in head resulted in a more efficient drainage pathway for Mermentau River freshwater inflows because the drainage potential is so much greater there than at the Catfish Point Control Structure, where drainage opportunity is very limited.

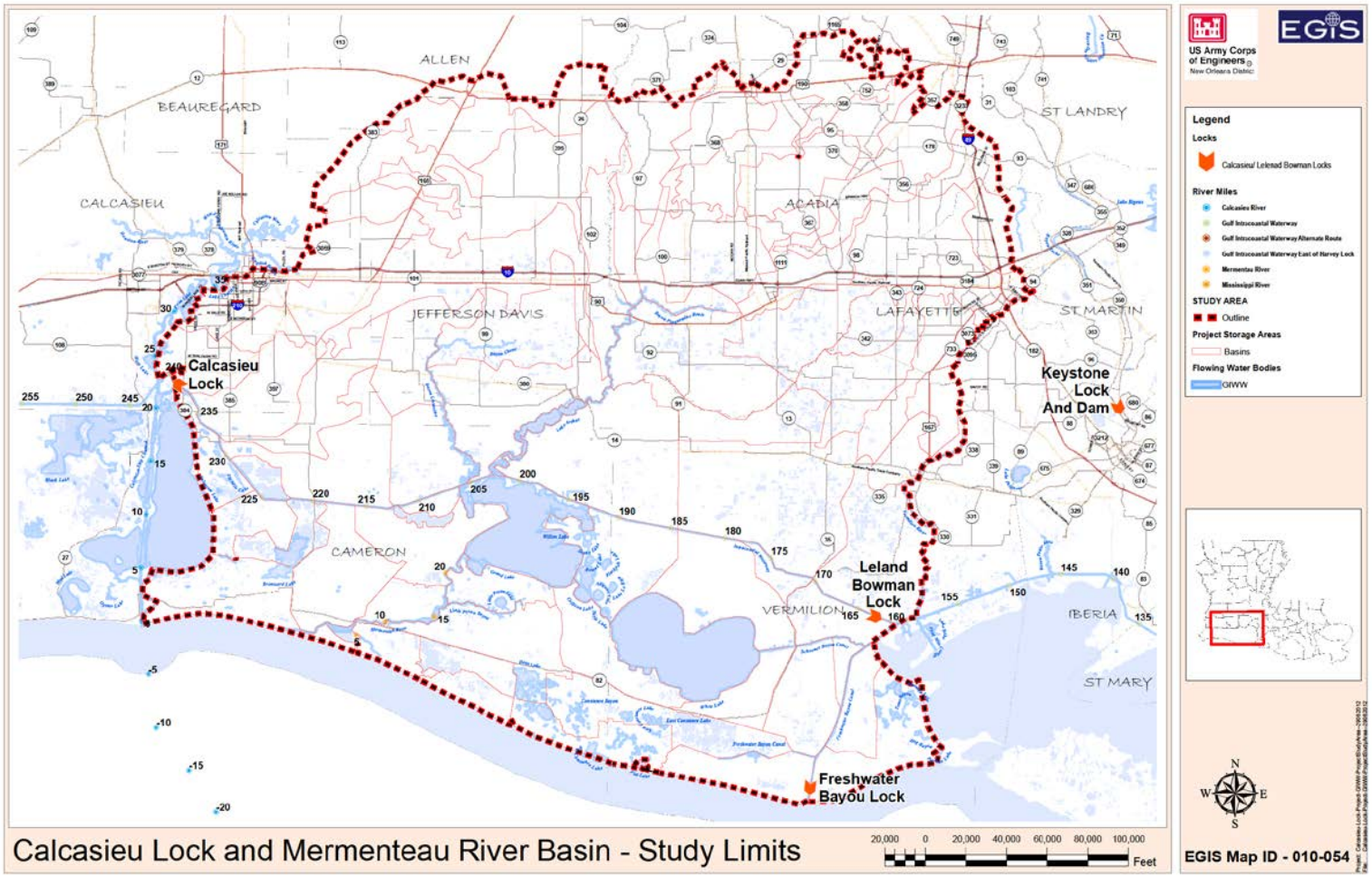


**Figure E-1.** Map Showing Project Location

## III. DESCRIPTION OF THE PROPOSED ACTION

The main feature of Alternative 1 (Recommended Plan) is a new channel to carry freshwater flows from the Mermentau Basin around the south side of the existing Calcasieu Lock. This channel, constructed by hydraulic dredging, would be about 3,600 feet long and 300 feet wide at the top. The channel would be dredged to -12 MLG, with a channel bottom width of 80 feet, and 1V on 3H side slopes. A 75-foot wide gated water control structure would be constructed inside the channel at about its midpoint to control the passage of freshwater flows. To control scouring, about 17,200 tons of riprap would be placed in the channel approximately 300 feet on either side of the water control structure at a thickness of 3 feet.

Construction access to the site would be via barge. A permanent access road would be constructed from the lock to the culvert structure for use by the lock personnel.

A total of about 233,000 cubic yards (cy) of dredged material would be generated from construction of the channel. Dredged material would be placed within the project area in four areas of open water totaling about 50 acres. Placement of dredged material into these disposal sites is intended to convert open water to estuarine marsh.

Mitigation for unavoidable losses to forested spoil bank (11.5 acres) would be required and included as part of the proposed action. Forested spoil bank mitigation would include implementation of tree stand improvements in about 15 acres of remaining forested habitat, plus the purchase of about 9.1 acres of credits from an approved bottomland hardwood mitigation bank serving the project area.

The assumed existing elevation for the disposal locations is -2.0 MLG, with placement to +1.5 MLG. To contain dredged material at these locations, earthen closures and weirs would be constructed around all disposal sites. All borrow material needed for closures and weirs would come from within the project area. About 4,000 LF of earthen closures (8.6 cy/lf) would be constructed to elevation +5.0 MLG, with a 5 ft crown, and 1V on 4H side slopes. About 16,500 LF of earthen weir containment (2.5 cy/lf) would be built along the existing marsh to elevation +1.5 MLG, with a 5 ft crown, and 1V on 4H side slopes.

The work is anticipated to occur during 2016-2017, with project completion by 2018. It is presumed that once construction has commenced, work would occur throughout the year, and not on a seasonal basis, to the extent practicable. Construction activities would be subject to seasonal restrictions if any Bald Eagle nest or nesting area of the Brown Pelican or other colonial waterbirds were to become established in the project area (see Appendix A, *Biological Assessmen*t)

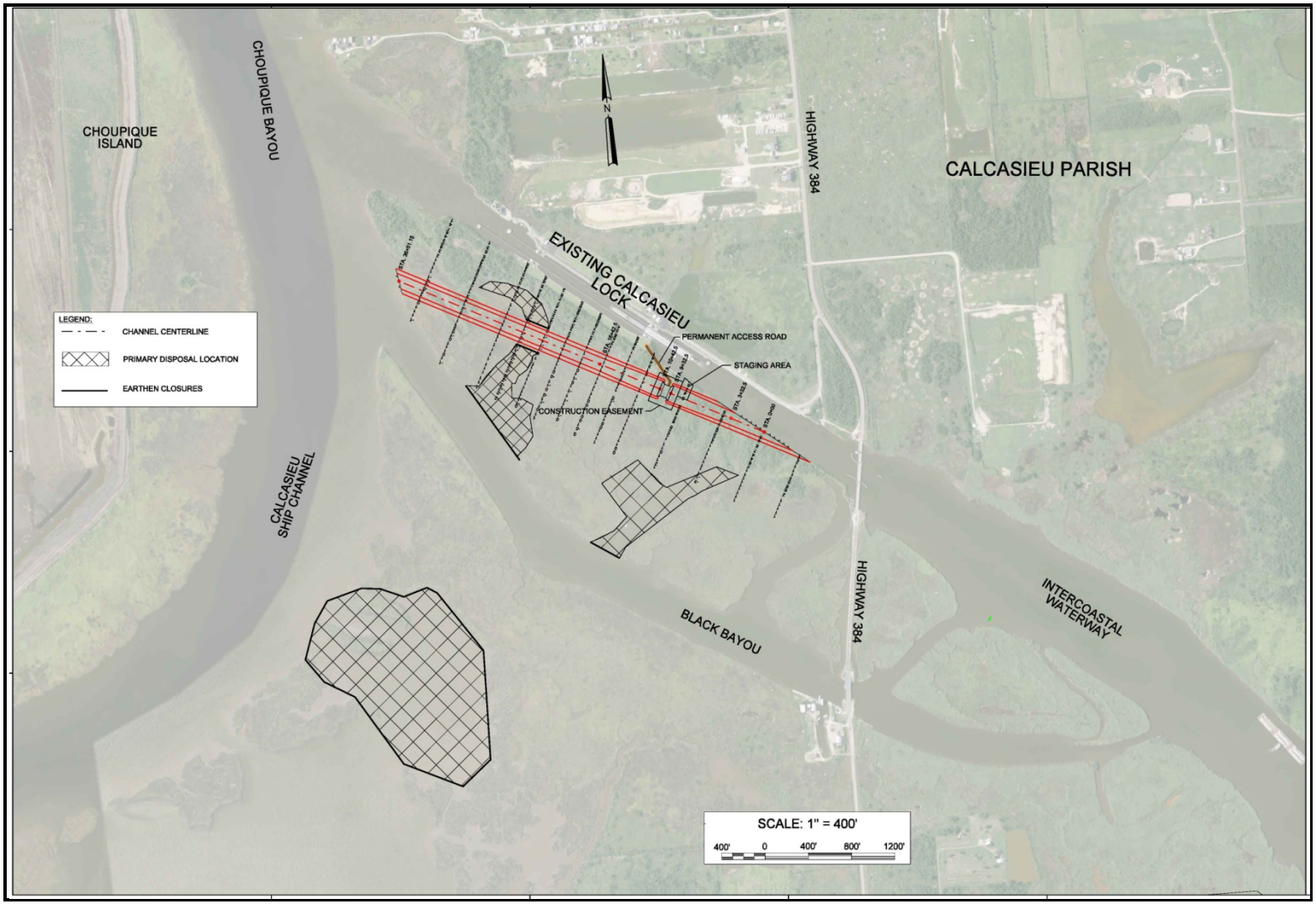


**Figure E-2.** Main Features of Alternative 1 (Recommended Plan)

## IV. GUIDELINES APPLICABLE TO ALL USES

**Guideline 1.1.** The guidelines must be read in their entirety. Any proposed use may be subject to the requirements of more than one guideline or section of guidelines and all applicable guidelines must be complied with.

**Guideline 1.2.** Conformance with applicable water and air quality laws, standards and regulations, and with those other laws, standards and regulations which have been incorporated into the coastal resources program shall be deemed in conformance with the program except to the extent that these guidelines would impose additional requirements.

**Guideline 1.3.** The guidelines include both general provisions applicable to all uses and specific provisions applicable only to certain types of uses. The general guidelines apply in all situations. The specific guidelines apply only to the situations they address. Specific and general guidelines should be interpreted to be consistent with each other. In the event there is an inconsistency, the specific should prevail.

**Guideline 1.4.** These guidelines are not intended to nor shall they be interpreted so as to result in an involuntary acquisition or taking of property.

**Guideline 1.5.** No use or activity shall be carried out or conducted in such a manner as to constitute a violation of the terms of a grant or donation of any lands or water-bottoms to the State or any subdivision thereof. Revocations of such grants and donations shall be avoided.

**Guideline 1.6.** Information regarding the following general factors shall be utilized by the permitting authority in evaluating whether the proposed use is in compliance with the guidelines.

1) type, nature and location of use

2) elevation, soil and water conditions and flood and storm hazard characteristics of site

3) techniques and materials used in construction, operation and maintenance of use

4) existing drainage patterns and water regimes of surrounding area including flow, circulation, quality, quantity and salinity; and impacts on them

5) availability of feasible alternative sites or methods – for implementing the use

6) designation of the area for certain uses as part of a local program

7) economic need for use and extent of impacts of use on economy of locality

8) extent of resulting public and private benefits

9) extent of coastal water dependency of the use

10) existence of necessary infrastructure to support the use and public costs resulting from use

11) extent of impacts on existing and traditional uses of the area and on future uses for which the area is suited

12) proximity to, and extent of impacts on important natural features such as beaches, barrier islands, tidal passes, wildlife and aquatic habitats, and forest lands

13) the extent to which regional, state and national interests are served including the national interest in resources and the siting of facilities in the coastal zones as identified in the coastal resources program

14) proximity to, and extent of impacts on, special areas, particular areas, or other areas of particular concern of the state program or local programs

15) likelihood of, and extent of impacts of, resulting secondary impacts and cumulative impacts

16) proximity to and extent of impacts on public lands or works, or historic, recreational or cultural resources

17) extent of impacts on navigation, fishing, public access, and recreational opportunities

18) extent of compatibility with natural and cultural setting

19) extent of long-term benefits or adverse impacts
***Response to Guidelines 1.1 – 1.6:*** *These guidelines are acknowledged and have been addressed through the preparation of responses to the guidelines contained within the specific use categories. The proposed project would be in conformance with all applicable water and air quality laws, standards and regulations, and with those other laws, standards and regulations which have been incorporated into LCRP, and is deemed in conformance with the program except to the extent that these guidelines would impose additional requirements. The proposed activity shall not be carried out or conducted in such a manner as to constitute a violation of the terms of a grant or donation of any lands or water-bottoms to the State or any subdivision thereof. Information regarding potential impacts of the proposed action is provided herein and in the accompanying Environmental Impact Statement (EIS).*

**Guideline 1.7.** It is the policy of the coastal resources program to avoid the following adverse impacts. To this end, all uses and activities shall be planned, sited, designed, constructed, operated and maintained to avoid to the maximum extent practicable significant:

1) reductions in the natural supply of sediment and nutrients to the coastal system by alterations of freshwater flow.
***Response:*** *The project would not reduce the natural supply of sediment and nutrients to the coastal system. There would be minor temporary and localized increases in suspended sediment and turbidity levels during disposal of dredged material.*

2) adverse economic impacts on the locality of the use and affected governmental bodies.
***Response:*** *No adverse impacts on the locality of use or governmental bodies would occur.*

3) detrimental discharges of inorganic nutrient compounds into coastal waters.
***Response:*** *No significant discharges of inorganic compounds are anticipated.*

4) alterations in the natural concentration of oxygen in coastal waters.
***Response:*** *Minor reductions in dissolved oxygen levels may occur during construction and dredge material placement efforts but are expected to be temporary.*

5) destruction or adverse alterations of streams, wetland, tidal passes, inshore waters and water bottoms, beaches, dunes, barrier islands, and other natural biologically valuable areas or protective coastal features.
***Response:*** *Under the proposed action, about 11.5 acres of forested spoil bank and 14 acres of brackish marsh would be directly impacted by constructible elements, as based on geographic information system analysis. Placement of dredge material in the proposed open water mitigation area may cause temporary increases in turbidity and suspended solids concentrations, and a reduction in light penetration in the immediate vicinity.*

*Adversely affects to these habitats was assessed by an interagency Habitat Evaluation Team (HET). The HET was represented by federal and state natural resource agencies expressing interest in participating in the habitat evaluation, and for this project included the U.S. Fish and Wildlife Service, National Marine Fisheries Service, Natural Resources Conservation Service, and U.S. Army Corps of Engineers.*

*With regard to all alternatives considered, there would be unavoidable impacts to brackish marsh, intermediate marsh, and forested spoil bank that were considered by the HET to be permanent and for which the need for compensatory mitigation was considered. In contrast, potential impacts to deeper open water habitats like Black Bayou were not regarded as permanent by the HET and did not warrant any such consideration.*

*The primary objective of the proposed forested spoil bank mitigation plan is to restore in acres the equivalent of -7.2 average annual habitat units (AAHUs) of forested spoil bank habitat. To meet the requirement of "in-kind" mitigation, the HET desired that because this is a man-made habitat, there is no "in-kind" equivalent natural habitat that directly corresponds. Functionally, this habitat is similar to natural coastal levee or chenier forests. It is also similar to coastal bottomland hardwood forests. (The HET chose to use the wetland value assessment (WVA)'s chenier/ridge model rather than the bottomland hardwood forest model to assess forested spoil bank habitat impacts because the former was developed to also include forested spoil bank habitat whereas the latter was not.) Consequently the HET decided that mitigation planning strategies for forested spoil bank habitat would consist of 1) enhancement of existing forested spoil bank habitat, 2) restoration of degraded natural levee or chenier habitat, or 3) creation of "man-made" ridge or chenier habitat. Therefore, to meet the "in-kind" requirement for forested spoil bank habitat, mitigation would take the form of one or more of these approaches.*

6) adverse disruption of existing social patterns.
***Response:*** *Not applicable.*

7) alterations of the natural temperature regime of coastal waters.
***Response:*** *Temperature regimes would not be adversely affected.*

8) detrimental changes in existing salinity regimes.
***Response:*** *There would be minor changes in localized salinity regimes - in the vicinity of the confluence of the GIWW and the Calcasieu River.*

9) detrimental changes in littoral and sediment transport processes.
***Response:*** *None anticipated.*

10) adverse effects of cumulative impacts.
***Response:*** *Due to construction of the new bypass channel, about 11 acres of land loss would occur. No project-induced erosion or subsidence would occur, and no significant, secondary, or cumulative impacts of the action would occur. This project would not result in reduced long-term biological productivity of the coastal ecosystem. Long-term biological productivity in the ecosystem would be enhanced through the placement of dredged material for marsh creation.*

11) detrimental discharges of suspended solids into coastal waters, including turbidity resulting from dredging.
***Response:*** *Best management practices (BMPs) for short and long-term control of suspended solids would be implemented during excavation. Although the hydraulically dredged material is not anticipated to significantly alter ambient water quality conditions in the project area, water quality monitoring would be performed in the vicinity of the disposal sites to ensure that Section 401 water quality certification conditions would be met.*

12) reductions or blockage of water flow or natural circulation patterns within or into an estuarine system or a wetland forest.
***Response:*** *The proposed action is intended to increase the flow of freshwater out of the Mermentau Basin.*

13) discharges of pathogens or toxic substances into coastal waters.
***Response:*** *No discharge of pathogens or toxic substances is anticipated.*

14) adverse alteration or destruction of archaeological, historical, or other cultural resources.
***Response:*** *No archaeological, historical, or other cultural resource sites would be impacted by construction.*

15) fostering of detrimental secondary impacts in undisturbed or biologically highly productive wetland areas.
***Response:*** *No adverse cumulative or secondary impacts to the biological productivity of wetland ecosystems are anticipated. The use of dredged material to create about 50 acres of emergent brackish marsh at shallow open water disposal sites would result in greater habitat diversity, additional estuarine habitat for economically important species, and improved recreation.*

16) adverse alteration or destruction of unique or valuable habitats, critical habitat for endangered species, important wildlife or fishery breeding or nursery areas, designated wildlife management or sanctuary areas, or forestlands.
***Response:*** *With the action, it is anticipated that there would be no direct or indirect impacts federally listed to threatened or endangered species. No critical habitat for any federally listed threatened, endangered, or candidate species has been designated within the project area or adjacent water bodies, and none of these species are known to breed within the project vicinity. Coordination with the U.S. Fish and Wildlife Service has been ongoing and will be concluded prior to the final EIS. The project would cause the loss of 14 acres of*

*brackish marsh; the Louisiana Department of Wildlife and Fisheries considers brackish marsh as becoming a rare natural community in the state. The project includes 50 acres of marsh restoration and creation to offset this loss. The project would adversely affect essential fish habitat; coordination with the National Marine Fisheries Services has been ongoing to determine that the marsh restoration and creation would offset these EFH impacts. This coordination will be concluded prior to the final EIS. Forestlands affected by the project consist of forested spoil bank habitat that is not natural yet functions similarly to natural ridge or chenier habitat; the project includes on-site and offsite mitigation to compensate for this upland loss.*

17) adverse alteration or destruction of public parks, shoreline access points, public works, designated recreation areas, scenic rivers, or other areas of public use and concern.
***Response:*** *No adverse alteration or destruction of public parks, shoreline access points, public works, designated recreation areas, scenic rivers, or other areas of public use and concern is anticipated*

18) adverse disruptions of coastal wildlife and fishery migratory patterns.
***Response:*** *Adverse disruptions of coastal wildlife and fishery migratory patterns are not anticipated. Short-term, minor disruptions to coastal wildlife would occur during disposal operations; however, these impacts would be minimally disruptive since most wildlife species in the area are mobile and would move to adjacent undisturbed areas during construction activities. Creation and restoration of emergent marsh and other coastal habitat would provide additional resting areas for many migratory neotropic birds, seabirds, waterfowl, and other organisms.*

19) land loss, erosion and subsidence.
***Response:*** *About 11 acres of land would be lost to construction of a new bypass channel around the existing Calcasieu lock. The affected land is a spoil bank created when the lock was constructed in 1950 and dredged material was side cast into marsh along the south side of the lock's south guidewall. No other land loss is expected, nor is any project-induced erosion or subsidence expected. Background subsidence of coastal marsh has been accounted for in the project's Wetland Value Assessment.*

20) increases in the potential for flood, hurricane or other storm damage, or increases in the likelihood that damage will occur from such hazards.
***Response:*** *Because marsh has been shown to provide a greater reduction in hurricane storm surge than open water, restored marsh would offer a benefit in reducing hurricane damage.*

21) reductions in the long-term biological productivity of the coastal ecosystem.
***Response:*** *This project would not result in reduced long-term biological productivity of the coastal ecosystem. Long-term biological productivity in the ecosystem would be enhanced through the placement of dredged material for marsh creation. The action would help offset coastal erosion and provide a low cost method of creating coastal wetlands including additional bird habitat, emergent marsh, and shallow open water supportive of submerged aquatic vegetation and productive fisheries habitat.*

**Guideline 1.8.** In those guidelines in which the modifier "maximum extent practicable" is used, the proposed use is in compliance with the guideline if the standard modified by the term is complied with. If the modified standard is not complied with, the use will be in compliance with the guideline if the permitting authority finds, after a systematic consideration of all pertinent information regarding the use, the site and the impacts of the use as set forth in guideline 1.6, and a balancing of their relative significance, that the benefits resulting from the proposed use would clearly outweigh the adverse impacts resulting from non-compliance with the modified standard and there are no feasible and practical alternative locations, methods and practices for the use that are in compliance with the modified standard and:

1) significant public benefits will result from the use, or;

2) the use would serve important regional, state or national interests, including the national interest in resources and the siting of facilities in the coastal zone identified in the coastal resources program, or;

3) the use is coastal water dependent. - The systematic consideration process shall also result in a determination of those conditions necessary for the use to be in compliance with the guideline. Those conditions shall assure that the use is carried out utilizing those locations, methods and practices which maximize conformance to the modified standard; are technically, economically, environmentally, socially and legally feasible and practical and minimize or offset those adverse impacts listed in guideline
***Response:*** *Acknowledged.*

**Guideline 1.9.** Uses shall to the maximum extent practicable be designed and carried out to permit multiple concurrent uses which are appropriate for the location and to avoid unnecessary conflicts with other uses of the vicinity.

***Response:*** *The action would provide for multiple, concurrent uses where appropriate and avoid unnecessary conflicts of other uses in the vicinity.*

**Guideline 1.10.** These guidelines are not intended to be, nor shall they be, interpreted to allow expansion of governmental authority beyond that established by La. R.S. 49:213.1 through 213.21, as amended; nor shall these guidelines be interpreted so as to require permits for specific uses legally commenced or established prior to the effective date of the coastal use permit program nor to normal maintenance or repair of such uses.

***Response:*** *Acknowledged.*

## V. GUIDELINES FOR LEVEES

**Guideline 2.1 – 2.6.** *The action would not involve the construction of levees, and therefore, these guidelines are not applicable.*

## VI. GUIDELINES FOR LINEAR FACILITIES

**Guideline 3.1.** Linear use alignments shall be planned to avoid adverse impacts on areas of high biological productivity or irreplaceable resource areas.

***Response:*** *Acknowledged.*

**Guideline 3.2.** Linear facilities involving the use of dredging or filling shall be avoided in wetland and estuarine areas to the maximum extent practicable.

***Response:*** *Acknowledge. All impacts would be either offset or mitigated for.*

**Guideline 3.3.** Linear facilities involving dredging shall be of the minimum practical size and length.

***Response:*** *Acknowledge.*

**Guideline 3.4.** To the maximum extent practicable, pipelines shall be installed through the "push ditch" method and the ditch backfilled.

***Response:*** *N/A*

**Guideline 3.5.** Existing corridors, rights of way, canals, and streams shall be utilized to the maximum extent practicable for linear facilities.

***Response:*** *Acknowledge.*

**Guideline 3.6.** Linear facilities and alignments shall be, to the maximum extent practicable, designed and constructed to permit multiple uses consistent with the nature of the facility.

***Response:*** *Acknowledge.*

**Guideline 3.7.** Linear facilities involving dredging shall not traverse or adversely affect any barrier island.

***Response:*** *Acknowledge.*

**Guideline 3.8.** Linear facilities involving dredging shall not traverse beaches, tidal passes, protective reefs or other natural gulf shoreline unless no other alternative exists. If a beach, tidal pass, reef or other natural gulf shoreline must be traversed for a non navigation canal, they shall be restored at least to their natural condition immediately upon completion of construction. Tidal passes shall not be permanently widened or deepened except when necessary to conduct the use. The best available restoration techniques which improve the traversed area's ability to serve as a shoreline shall be used

***Response:*** *N/A*

**Guideline 3.9.** Linear facilities shall be planned, designed, located and built using the best practical techniques to minimize disruption of natural hydrologic and sediment transport patterns, sheet flow, and water quality, and to minimize adverse impacts on wetlands.

***Response:*** *Acknowledge.*

**Guideline 3.10.** Linear facilities shall be planned, designed, and built using the best practical techniques to prevent bank slumping and erosion, saltwater intrusion, and to minimize the potential for inland movement of storm generated surges. Consideration shall be given to the use of locks in navigation canals and channels which connect more saline areas with fresher areas.

***Response:*** *Acknowledge. The project includes a salt-water barrier (gated water control structure) in the new bypass channel.*

**Guideline 3.11.** All non navigation canals, channels and ditches which connect more saline areas with fresher areas shall be plugged at all waterway crossings and at intervals between crossings in order to compartmentalize them. The plugs shall be properly maintained.

***Response:*** *Acknowledge.*

**Guideline 3.12.** The multiple use of existing canals, directional drilling and other practical techniques shall be utilized to the maximum extent practicable to minimize the number and size of access canals, to minimize changes of natural systems and to minimize adverse impacts on natural areas and wildlife and fisheries habitat.

***Response:*** *Acknowledge.*

**Guideline 3.13.** All pipelines shall be constructed in accordance with parts 191, 192, and 195 of Title 49 of the Code of Federal Regulations, as amended, and in conformance with the Commissioner of Conservation's Pipeline Safety Rules and Regulations and those safety requirements established by La. R. S. 45:408, whichever would require higher standards.

***Response:*** *N/A*

**Guideline 3.14.** Areas dredged for linear facilities shall be backfilled or otherwise restored to the pre existing conditions upon cessation of use for navigation purposes to the maximum extent practicable.

***Response:*** *Acknowledge.*

**Guideline 3.15.** The best practical techniques for site restoration and re-vegetation shall be utilized for all linear facilities.

***Response:*** *Acknowledge.*

**Guideline 3.16.** Confined and dead end canals shall be avoided to the maximum extent practicable. Approved canals must be designed and constructed using the best practical techniques to avoid water stagnation and eutrophication.

***Response:*** *Acknowledge.*

## VII. GUIDELINES FOR DREDGED MATERIAL DEPOSITION

**Guideline 4.1. Spoil** shall be deposited utilizing the best practical techniques to avoid disruption of water movement, flow, circulation and quality.

***Response:*** *Disruption of the movement, flow, circulation, or quality of water caused by hydraulic dredging deposition, in association with the action, is expected to be short-term and temporary. Any minor increases in suspended sediment and turbidity levels during material deposition would be temporary and highly localized. Controlled and monitored deposition of dredged material would ensure placement to proper heights for desired habitat creation.*

**Guideline 4.2.** Spoil shall be used to the maximum extent practicable to improve productivity or create new habitat, reduce or compensate for environmental damage done by dredging activities, or prevent environmental damage. Otherwise, existing spoil disposal areas or upland disposal shall be utilized to the maximum extent practicable rather than creating new disposal areas.

***Response:*** *Acknowledge. All hydraulically dredged material generated from construction of the new bypass channel would be placed in shallow water areas in or adjacent to the project area to create or restore about 50 acres of brackish marsh habitat .*

**Guideline 4.3.** Spoil shall not be disposed of in a manner which could result in the impounding or draining of wetlands or the creation of development sites unless the spoil deposition is part of an approved levee or land surface alteration project.

***Response:*** *Acknowledge.*

**Guideline 4.4.** Spoil shall not be disposed of on marsh, known oyster or clam reefs or in areas of submersed vegetation to the maximum extent practicable.

***Response:*** *The action would not involve the placement of spoil on a marsh, oyster or clam reefs, or areas of submerged vegetation. Submersed aquatic vegetation is uncommon within the project area.*

**Guideline 4.5.** Spoil shall not be disposed of in such a manner as to create a hindrance to navigation or fishing, or hinder timber growth.

***Response:*** *The action would not create a hindrance to navigation or fishing, or hinder timber growth.*

**Guideline 4.6.** Spoil disposal areas shall be designed and constructed and maintained using the best practical techniques to retain the spoil at the site, reduce turbidity, and reduce shoreline erosion when appropriate.

***Response:*** *Acknowledge. All disposal areas would be contained and designed for the creation or restoration of brackish marsh.*

**Guideline 4.7** The alienation of state owned property shall not result from spoil deposition activities without the consent of the Department of Natural Resources.

***Response:*** *The action would not result in the alienation of state owned property.*

## VIII. GUIDELINES FOR SHORELINE MODIFICATIONS

***Response:*** *No shoreline modifications are part of the action; the need for any stone armoring along Black Bayou or the GIWW will be determined during the next (preconstruction engineering and design) project phase.*

**Guideline 5.1.** Non-structural methods of shoreline protection shall be utilized to the maximum extent practicable.

**Guideline 5.2.** Shoreline modification structures shall be designed and built using best practical techniques to minimize adverse environmental impacts.

**Guideline 5.3.** Shoreline modification structures shall be lighted or marked in accordance with U.S. Coast Guard regulations, not interfere with navigation, and should foster fishing, other recreational opportunities, and public access.

**Guideline 5.4.** Shoreline modification structures shall be built using best practical materials and techniques to avoid the introduction of pollutants and toxic substances into coastal waters.

**Guideline 5.5.** Piers and docks and other harbor structures shall be designed and built using best practical techniques to avoid obstruction of water circulation.

**Guideline 5.6.** Marinas, and similar commercial and recreational developments shall to the maximum extent practicable not be located so as to result in adverse impacts on open productive oyster beds, or submersed grass beds.

**Guideline 5.7.** Neglected or abandoned shoreline modification structures, piers, docks, mooring and other harbor structures shall be removed at the owner's expense, when appropriate.

**Guideline 5.8.** Shoreline stabilization structures shall not be built for the purpose of creating fill areas for development unless part of an approved surface alteration use.

**Guideline 5.9.** Jetties, groins, breakwaters and similar structures shall be planned, designed and constructed so as to avoid to the maximum extent practicable downstream land loss and erosion

## IX. GUIDELINES FOR SURFACE ALTERATIONS

**Guideline 6.1.** Industrial, commercial, urban, residential, and recreational uses are necessary to provide adequate economic growth and development. To this end, such uses will be encouraged in those areas of the coastal zone that are suitable for development. Those uses shall be consistent with the other guidelines and shall, to the maximum extent practicable, take place only:

1) on lands 5 feet or more above sea level or within fast lands; or

2) on lands which have foundation conditions sufficiently stable to support the use, and where flood and storm hazards are minimal or where protection from these hazards can be reasonably well achieved, and where the public safety would not be unreasonably endangered; and

   - the land is already in high intensity of development use, or
   - there is adequate supporting infrastructure, or
   - the vicinity has a tradition of use for similar habitation or development

***Response:*** *Acknowledge.*

**Guideline 6.2.** Public and private works projects such as levees, drainage improvements, roads, airports, ports, and public utilities are necessary to protect and support needed development and shall be encouraged. Such projects shall, to the maximum extent practicable, take place only when:

1. they protect or serve those areas suitable for development pursuant to Guideline 6.1; and

2. they are consistent with the other guidelines; and

3. they are consistent with all relevant adopted state, local and regional plans.

***Response:*** *Acknowledge.*

**Guideline 6.3.** BLANK (Deleted)

**Guideline 6.4.** To the maximum extent practicable wetland areas shall not be drained -or filled. Any approved drain or fill project shall be designed and constructed using best practical techniques to minimize present and future property damage and adverse environmental impacts.

***Response:*** *Acknowledge. The brackish marsh losses resulting from the (Alternative 1 (Recommended Plan)) are unavoidable. Construction of the new bypass channel and establishment of the dredged material disposal areas would be designed using best management practices.*

**Guideline 6.5.** Coastal water dependent uses shall be given special consideration in permitting because of their reduced choice of alternatives.

***Response:*** *Acknowledge*.

**Guideline 6.6.** Areas modified by surface alteration activities shall, to the maximum extent practicable, be re-vegetated, refilled, cleaned and restored to their predevelopment condition upon termination of the use.

***Response:*** *Acknowledge.*

**Guideline 6.7.** Site clearing shall to the maximum extent practicable be limited to those areas immediately required for physical development.

***Response:*** *Acknowledge.*

**Guideline 6.8.** Surface alterations shall, to the maximum extent practicable, be located away from critical wildlife areas and vegetation areas. Alterations in wildlife preserves and management areas shall be conducted in strict accord with the requirements of the wildlife management body.

***Response:*** *Acknowledge.*

**Guideline 6.9.** Surface alterations which have high adverse impacts on natural functions shall not occur, to the maximum extent practicable, on barrier islands and beaches, isolated cheniers, isolated natural ridges or levees,' or in wildlife and aquatic species breeding or spawning areas, or in important migratory routes.

***Response:*** *Acknowledge. The spoil bank area along the south side of Calcasieu lock is not a natural ridge or chenier (these natural features are located at least 15 miles to the south of the project area).*

**Guideline 6.10.** The creation of low dissolved oxygen conditions in the water or traps for heavy metals shall be avoided to the maximum extent practicable.

***Response:*** *Acknowledge.*

**Guideline 6.11.** Surface mining and shell dredging shall be carried out utilizing the best practical techniques to minimize adverse environmental impacts.

***Response:*** *N/A*

**Guideline 6.12.** The creation of underwater obstructions which adversely affect fishing or navigation shall be avoided to the maximum extent practicable.

***Response:*** *N/A*

**Guideline 6.13.** Surface alteration sites and facilities shall be designed, constructed, and operated using the best practical techniques to prevent the release of pollutants or toxic substances into the environment and minimize other adverse impacts.

***Response:*** *Acknowledge. Such sites and facilities as well as fill material used for construction would be free from hazardous and regulated solid wastes.*

**Guideline 6.14.** To the maximum extent practicable only material that is free of contaminants and compatible with the environmental setting shall be used as fill.

***Response:*** *Acknowledge. Fill material used for the construction would be free from hazardous and regulated solid wastes.*

## X. GUIDELINES FOR HYDROLOGIC AND SEDIMENT TRANSPORT MODIFICATIONS

**Guideline 7.1.** The controlled diversion of sediment laden waters to initiate new cycles of marsh building and sediment nourishment shall be encouraged and utilized whenever such diversion will enhance the viability and productivity of the outfall area. Such diversions shall incorporate a plan for monitoring and reduction and/or amelioration of the effects of pollutants present in the freshwater source.

***Response:*** *Acknowledge.*

**Guideline 7.2.** Sediment deposition systems may be used to offset land loss, to create or restore wetland areas or enhance building characteristics of a development site. Such systems shall only be utilized as part of an approved plan. Sediment from these systems shall only be discharged in the area that the proposed use is to be accomplished.

***Response:*** *It is anticipated that once dredged material settles to marsh elevations, the area would naturally vegetate and become supportive of suitable habitat for a variety of aquatic, terrestrial, and avian wildlife species. Furthermore, this marsh creation would help to offset land loss in the project vicinity. A portion of the marsh restoration and creation areas would be planted with appropriate native plant species to speed up this process.*

**Guideline 7.3.** Undesirable deposition of sediments in sensitive habitat or navigation areas shall be avoided through the use of the best preventive techniques.

***Response:*** *Acknowledged. Best preventative techniques would be utilized to avoid undesirable deposition of sediments into sensitive habitat or navigation areas.*

**Guideline 7.4.** The diversion of freshwater through siphons and controlled conduits and channels, and overland flow to offset saltwater intrusion and to introduce nutrients into wetlands shall be encouraged and utilized whenever such diversion will enhance the viability and productivity of the outfall area. Such diversions shall incorporate a plan for monitoring and reduction and/or amelioration of the effects of pollutants present in the freshwater source.

***Response:*** *The action does not include such diversions.*

**Guideline 7.5.** Water or marsh management plans shall result in an overall benefit to the productivity of the area.

***Response:*** *Acknowledged.*

**Guideline 7.6.** Water control structures shall be assessed separately based on their individual merits and impacts and in relation to their overall water or marsh management plan of which they are a part.

***Response:*** *Acknowledged. The new bypass channel would have a gated water control structure. This structure would facilitate the passage of freshwater flows from the Mermentau basin to the east, which supports extensive and diverse freshwater marshes. These marshes in general have experienced impeded interior drainage due to modified natural drainage patterns in the coastal zone, and as a result the natural productivity and diversity of these marshes has become impaired. With this*

*water control structure, the project would indirectly improve the ecological integrity of the Mermentau basin's freshwater marshes.*

**Guideline 7.7.** Weirs and similar water control structures shall be designed and built using the best practical techniques to prevent "cut arounds," permit tidal exchange in tidal areas, and minimize obstruction of the migration of aquatic organisms.

***Response:*** *Acknowledge. The dredged material disposal areas would be contained and the retention berms would include dikes or weirs; these would be designed to facilitate tidal exchange and the passage of aquatic organisms into the created or restored marsh.*

**Guideline 7.8.** Impoundments which prevent normal tidal exchange and/or the migration of aquatic organisms shall not be constructed in brackish and saline areas to the maximum extent practicable.

***Response:*** *The action does not include the creation of impoundments*.

**Guideline 7.9.** Withdrawal of surface and ground water shall not result in saltwater intrusion or land subsidence to the maximum extent practicable.

***Response:*** *N/A*

## XI. GUIDELINES FOR DISPOSAL OF WASTES

**Guidelines 8.1 – 8.9.** The proposed action would not involve the disposal of wastes; therefore, these guidelines are not applicable.

## XII. GUIDELINES FOR USES THAT RESULT IN THE ALTERATION OF WATERS DRAINING INTO COASTAL WATERS

**Guideline 9.1.** Upland and upstream water management programs which affect coastal waters and wetlands shall be designed and constructed to preserve or enhance existing water quality, volume, and rate of flow to the maximum extent practicable.

***Response:*** *Acknowledged.*

**Guideline 9.2.** Runoff from developed areas shall to the maximum extent practicable be managed to simulate natural water patterns, quantity, quality and rate of flow.

***Response:*** *Acknowledged.*

**Guideline 9.3.** Runoff and erosion from agricultural lands shall be minimized through the best practical techniques.

***Response:*** *Acknowledged.*

## XIII GUIDELINES FOR OIL, GAS, AND OTHER MINERAL ACTIVITIES

**Guidelines 10.1 – 10.14.** The proposed action would not involve oil, gas, and other mineral activities; therefore, these guidelines are not applicable.

## XIV. CONSISTENCY DETERMINATION

The principal problem to be addressed is the delays to navigation induced through operation of the Calcasieu Lock for drainage of the Mermentau River Basin as part of its authorized purpose. The primary opportunities are to reduce or eliminate commercial traffic delays and improve the national and regional economic conditions. The need to maintain the effectiveness of Calcasieu Lock as a salinity barrier for the Mermentau Basin is critical.

Placement of dredged material in the proposed shallow open water disposal sites would result in the creation of approximately 50 acres of productive brackish marsh habitat, which would ultimately provide valuable fisheries and wildlife habitat and more productive categories of essential fish habitat, and improve shoreline protection and storm surge attenuation capacity in this portion of the Calcasieu River Basin.

The action was planned to avoid adverse impacts on high biological productivity or irreplaceable resource areas. The footprint was minimized to the extent practicable to avoid wetland and open water areas. The action would provide significant public benefit and would serve important regional, state, and national interest, and the benefits resulting from the action clearly outweigh the adverse impacts.

Based on this evaluation, the US Army Corps of Engineers has determined that the action, represented by Alternative 1 (Recommended Plan), is consistent, to the maximum extent practicable, with the State of Louisiana's Coastal Resources Program.

| | |
|---|---|
| **From:** | Jeff Harris |
| **To:** | George, Timothy K MVS |
| **Cc:** | Varisco, Jeffrey J MVN; David_Castellanos@fws.gov; Sharon McCarthy Pecquet |
| **Subject:** | [EXTERNAL] Calcasieu Lock mitigation |
| **Date:** | Thursday, December 05, 2013 10:21:13 AM |

Tim-

As you may know, the LDNR Office of Coastal Management has requirements for compensatory mitigation that differ slightly from those of the Corps. The most significant is that we are required to use a different WVA model.

Based on the information submitted, the proposed mitigation plan for the Calcasieu Lock Replacement project does not meet OCM mitigation requirements. In order to be consistent with the Louisiana Coastal Resources Program, a minimum of 10.1 acres of brackish marsh must be maintained for 20 years. OCM recommends that a portion of the 25 acres of brackish marsh created incidentally during project construction be designated and maintained as compensatory mitigation, in order to meet this requirement.

Also, the information regarding forested ridge habitat was not sufficient to determine whether impacts should be assessed or mitigated for under our program. In some places in Appendix I this is referred to as "forested spoil bank," and in others "forested ridge." The reference habitat cited is Chenier Ridge Habitat, which is considered a special feature to be protected under our program. Avoidance and/or compensatory mitigation may be necessary, but we can't evaluate this without complete information on the species composition of the impacted habitat.

A more detailed explanation of our findings can be provided if necessary. In order to complete our review, we will need the species composition data for the Forested Ridge habitat. Once that point is settled, we'll need a letter from the Corps revising the consistency determination to include a proposal for the additional mitigation. I recommend that the additional mitigation is incorporated into the Final EIS.

Our decision deadline for this project is Dec. 16. This appears to be the only aspect of the review that still needs to be resolved, so as soon as we get it cleared up we should be able to get a consistency decision out.

Thanks,

--Jeff
(225) 342-7949

BOBBY JINDAL
GOVERNOR

STEPHEN CHUSTZ
SECRETARY

# State of Louisiana

## DEPARTMENT OF NATURAL RESOURCES

## OFFICE OF COASTAL MANAGEMENT

December 12, 2013

Timothy K. George
Environmental Compliance Section CEMVP-PD-C
U.S. Army Corps of Engineers, St. Louis District
1222 Spruce Street
St. Louis, Missouri 63103-2833

RE: **C20130015,** Coastal Zone Consistency
**U. S. Army Corps of Engineers**
Direct Federal Action
Calcasieu Lock Replacement project**, Cameron Parish**

Dear Mr. George:

This office has received the above referenced federal application for consistency review with the approved Louisiana Coastal Resources Program in accordance with Section 307(c) of the Federal Coastal Zone Management Act of 1972, as amended. NOAA Regulations on Federal Consistency, at 15 CFR §930.41(a), allow 60 days for the review of Direct Federal Activities, and at §930.41(c)(b) allow additional review time upon mutual agreement between the Federal agency and the State Coastal Zone Program. This letter is to confirm that the Office of Coastal Management and the U.S. Army Corps of Engineers have mutually agreed to extend the State review time to January 14, 2014.

A final determination will be made within the authorized time period. If you have any questions please contact Jeff Harris of the Consistency Section at (225) 342-7949.

Sincerely,

Don Haydel
Acting Administrator
Interagency Affairs/Field Services Division

DH/jdh

cc: Jeff Varisco, COE-NOD

| | |
|---|---|
| **From:** | George, Timothy K MVS |
| **To:** | "Jeff Harris" |
| **Cc:** | Varisco, Jeffrey J MVN; Brown, Michael T MVN |
| **Subject:** | USACE surveys - Calcasieu Lock project (UNCLASSIFIED) |
| **Date:** | Friday, December 13, 2013 3:20:00 PM |
| **Attachments:** | USACE Calcasieu Lock Survey 2013.pdf |

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Classification: UNCLASSIFIED
Caveats: NONE

Jeff,

Since release of the USACE draft Calcasieu Lock feasibility report/EIS for public review in October 2013, topographic and bathymetric surveys of the project area are needed to continue advanced design on the tentatively selected plan (TSP) and to better understand the ground conditions of the potential alignment.

Because these surveys were not included as part of the TSP and are not reflected in the CZM determination we prepared and that you currently have under review, we are regarding them as a separate action. Therefore, I would like to coordinate this survey action with your agency.

The proposed action is acquiring topographic and bathymetric surveys as described in the attachment and at the locations shown on the map included therein. To conduct the topographic surveys (dashed green lines), about 15 transects will be taken at approximately 400 foot intervals. Shot intervals on these transects will be taken at 20 foot intervals. You were provided this same information in a separate email message dated 12/10/2013.

To conduct the bathymetric surveys (dashed red lines), about 7 transects will extend approximately from water's edge to water's edge of the adjacent waterway (GIWW). The types of equipment to be used in conducting the surveys include standard shallow draft survey vessels and airboats. Marsh buggies will not be used. The survey vessel will be equipped with fathometers, and vessels and airboats will have GPS equipment necessary to provide horizontal and vertical control. Survey work is to occur during the non-growing season in late 2013 – early 2014.

Regarding coastal resources, the topographic surveys will cross mostly brackish marsh and some upland forested spoil bank that lies along the south side of the lock. The bathymetric surveys will be confined to the GIWW.
The contractor will be instructed not to retrack in the same path when transecting the marsh by airboat to minimize impacts.

USACE has reviewed the coastal zone consistency permit requirements and has determined that the proposed surveys will have no reasonably foreseeable effects to these coastal resources, including open water, forested upland, and coastal marsh, and are providing this negative determination pursuant to federal regulations at 15 CFR §930.35.

Please advise if you do or do not concur with our negative determination.

Thanks,

Tim

Timothy K. George
Supervisory Ecologist
Environmental Compliance Section (CEMVP-PD-C)
U.S. Army Corps of Engineers, St. Louis District
1222 Spruce Street
St. Louis, Missouri 63103-2833
314-331-8459

Timothy.K.George@usace.army.mil

**Date:**10/23/2013

**CEMVN-ED-L**

**Author: Brian Leaumont ext:** 2777

**MEMORANDUM FOR: C/Design Services Branch**

**SUBJECT: Request for Surveys**

ED-SS Job #: _____
(Assigned in ED-SS)

1. **** P2 #** _____
   **** ED #** (**Required for relating jobs to the Monthly Engr. Div. Schedule review meeting report)

2. **Date Completed Survey is required:** To be determined. An IGE for surveys is required in order to determine if the requested surveys will conducted.
   (Includes ED-SS Data Processing & QC Time)

3. **Job Title:** Calcasieu Lock Replacement Study

4. **Job Location:** Calcasieu Lock, Calcasieu Parish,LA
   Levee District: Other:
   Nearest Town: Lake Charles and Hackberry, LA

5. **Survey Type:** (Check as Applicable)

   a. ☒ Overbank Cross-Sections; Approximate Number: 27
   b. ☒ Hydrographic Cross-Sections; Approximate Number: 07

   c. ☒ Profile(s); Estimated Length: 4050 ft

   d. ☐ B/L Traverse; Estimated Length: _____ usft
   ☐ New ☐ Re-establish ☐ Recover ☐ Offsets Allowed

   e. ☐ Reference Off-sets

   f. ☐ Topographic Survey (used to produce contours or DTM)

   g. ☐-Other: _____

6. **X-Section Reference:**

   Distances (DBLs or Offsets) ☐-C/L ☐-B/L
   Stationing ☐-C/L ☐-B/L

   **Section Limits:** (choose one)
   ☐ Stations
   ☒ Ranges
   ☐ Mileage

| From Section | To Section | Int (ft) |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

| Left of BL (ft) | Right of BL (ft) | Shot Int (ft) |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

7. **Survey Control**:

| | **Vertical** | **Horizontal** |
|---|---|---|
| **Enclosed:** | ☐ Yes ☒ No | ☐ Yes ☒ No |
| **Datum:** | NAVD88 | NAD83 |
| **Epoch:** | 2004.65<br>☒ Other Latest | |
| **Accuracy Required:** | 0.30 ft (most cost efficient) | 0.05 ft |

8. **Description of work to be performed:**
A. General: In an effort to provide quantities for the Calcasieu Lock replacement study, the work can be broken out into two distinct areas of work, (1) surveys of the proposed culvert structure site and (2) hydo surveys of the GIWW channel as shown on the enclosed drawings,

Descriptions of work for each of these areas are as follows:

(1) Surveys of the proposed culvert alignment site.

Requirements for cross sections ranges are shown on the attached sheet, S-01. Ranges CL-1 through CL-14 extend from waters edge to waters edge of the proposed site.

Ranges at the culvert location (shown on sheet S-01, insert A) shall run parallel to the centerline profile (PRO-1) and extend approx. 100 ft on each side of CL-6, and spaced at 25 ft intervals.

Ranges BE-1 through BE5 shall run east/west and extend from the bank adjacent to Choupique Bayou the edge of the existing marsh.

A centerline profile (PRO-1) will run the length of the proposed centerline.

All range and profile end points are provided in the table on Sheet S-01. Elevations shall be provided at 20' intervals along the designated ranges and 25' intervals for the profile, while capturing all abrupt breaks in grade.

(2) Surveys of approach channels.

Requirements for these cross section ranges are shown on the attached sheet, S-01. Ranges IW-1 through IW-7 shall extend across the Intercoastal Waretway. Range end points are provided in the table on Sheet S-01. Elevations shall be provided at 20' intervals along the designated ranges, and all abrupt breaks in grade. Also, locate all utilities, pipelines, and structures.

B. Leslie Lombard, extension 2490, shall be contacted for funding concerns.

C. All surveys and submittals shall meet the requirements set forth in the USACE New Orleans District Guide for Minimum Survey Standards document found at:
https://www.intra.mvn.usace.army.mil/edss/USACE_MVN_Min_Survey_Standards.PDF

(Describe in detail and/or attach a separate scope)

9. **LMN830 Format Deliverable:** ☒ Yes ☐-No

10. **CADD Format Deliverable:** ☐ Yes ☒-No

Description CADD Requirement: _____
(Describe in detail and/or attach a separate scope)

11. **Project Control Monuments (for Construction):** ☐ Yes ☒-No

Vertical control ☐
Horizontal control ☐

How many project control monuments are required: _____
Description of location(s) of project control to be established: _____

**Note:** Survey control monuments (as opposed to project control monuments) set for the purpose of this survey should not be considered valid project control for construction unless specified. Survey control monuments are set for the purpose of the survey to be performed and not intended to hold their elevations past the dates of the survey.

The locations of the project control must be specified to ensure that they are not set in locations that will be affected during construction.

12. **GIS Format Deliverable:** ☐ Yes ☒ No

Description GIS Requirement: _____
(Describe in detail and/or attach a separate scope)

13. **Other Value-added Digital Format Deliverable:** ☒ Yes ☐ No
(e.g. DTMs, Visualizations, AVIs, Models, etc.)

Description Digital Requirement: Google Earth KMZ files shall also be provided of all surveys.
(Describe in detail and/or attach a separate scope)

14. **Right of Entry Available**: ☐ Yes, Attached.
☒ No, Available by:
Requested on: _____

15. **Please Provide:** ☒ Cost Estimate
☒ Time Schedule
☐ Resume of Negotiations

16. **Funding Source:** In-house PR&C Number: Contact Leslie Lombard, ext 2490 (S&A Cost)

Contractual PR&C Number: _____

17. **5 Copies of Plans, Maps, Drawings, Etc. Enclosed:** ☒ Yes ☐ No
File URL: _____

18. **Point of Contact:** Brian Leaumont **Ext:** 2777

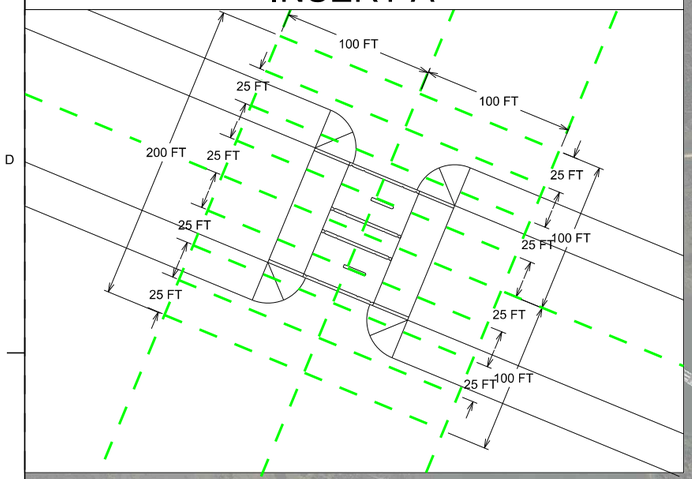
19. **Functional Team Leader:** Leslie Lombard **Ext:** 2490

For Survey Job Status information, schedule updates, Survey Frequently Asked Questions and other references, please visit the Survey Section web pages at:
**https://www.intra.mvn.usace.army.mil/ed/edss/**

**Keith O'Cain**
**Civil Branch, Waterways Section**

**Encls: 5 copies of 1 Set- Plan Drawings**

## INSERT A




| RANGE END POINTS | NAD83 LA LAMBERT | RANGE END POINTS | NAD83 LA LAMBERT | RANGE END POINTS | NAD83 LA LAMBERT | RANGE END POINTS | NAD83 LA LAMBERT | RANGE END POINTS | NAD83 LA LAMBERT | RANGE END POINTS | NAD83 LA LAMBERT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CL-1A | X 2659385.334<br>Y 582687.107 | CL-7A | X 2660234.827<br>Y 581299.909 | CL-13A | X 2662072.086<br>Y 579641.128 | IW-1A | X 2662259.862<br>Y 581510.609 | IW-7A | X 2664381.462<br>Y 579342.038 | BE-1A | X 2658387.677<br>Y 580143.068 |
| CL-1B | X 2659828.251<br>Y 583523.296 | CL-7B | X 2660961.293<br>Y 582671.416 | CL-13B | X 2662826.824<br>Y 581066.011 | IW-1B | X 2662438.310<br>Y 581746.837 | IW-7B | X 2664971.214<br>Y 580122.743 | BE-1B | X 2659536.608<br>Y 580033.124 |
| CL-2A | X 2659611.012<br>Y 582258.604 | CL-8A | X 2660429.165<br>Y 580812.240 | CL-14A | X 2662421.047<br>Y 579445.374 | IW-2A | X 2662643.359<br>Y 581188.758 | | | BE-2A | X 2658017.368<br>Y 579776.676 |
| CL-2B | X 2660162.891<br>Y 583300.507 | CL-8B | X 2661279.141<br>Y 582416.926 | CL-14B | X 2663144.919<br>Y 580811.985 | IW-2B | X 2662837.272<br>Y 581445.457 | | | BE-2B | X 2659841.413<br>Y 579602.130 |
| CL-3A | X 2659927.921<br>Y 582002.341 | CL-9A | X 2660730.614<br>Y 580526.790 | | | IW-3A | X 2663047.519<br>Y 580894.261 | PRO-1A | X 2659016.650<br>Y 583170.859 | BE-3A | X 2657551.900<br>Y 579419.390 |
| CL-3B | X 2660493.797<br>Y 583070.668 | CL-9B | X 2661579.458<br>Y 582129.337 | | | IW-3B | X 2663246.554<br>Y 581157.740 | PRO-1B | X 2662596.972<br>Y 581274.418 | BE-3B | X 2659855.956<br>Y 579198.911 |
| CL-4A | X 2660092.652<br>Y 581886.057 | CL-10A | X 2661057.354<br>Y 580289.085 | | | IW-4A | X 2663381.578<br>Y 580506.963 | | | BE-4A | X 2657177.596<br>Y 579053.381 |
| CL-4B | X 2660647.162<br>Y 582932.927 | CL-10B | X 2661871.314<br>Y 581825.775 | | | IW-4B | X 2663727.195<br>Y 580964.487 | | | BE-4B | X 2659868.758<br>Y 578795.858 |
| CL-5A | X 2660269.389<br>Y 581792.442 | CL-11A | X 2661401.615<br>Y 580084.459 | | | IW-5A | X 2663740.438<br>Y 580152.498 | | | BE-5A | X 2656597.544<br>Y 578707.060 |
| CL-5B | X 2660799.762<br>Y 582793.741 | CL-11B | X 2662184.950<br>Y 581563.331 | | | IW-5B | X 2664168.275<br>Y 580718.863 | | | BE-5B | X 2659762.525<br>Y 578404.197 |
| CL-6A | X 2660876.917<br>Y 582729.443 | CL-12A | X 2661727.747<br>Y 579845.606 | | | IW-6A | X 2664087.496<br>Y 579782.409 | | | | |
| CL-6B | X 2660352.476<br>Y 581739.341 | CL-12B | X 2662494.571<br>Y 581293.307 | | | IW-6B | X 2664565.059<br>Y 580414.601 | | | | |

LEGEND

- PROPOSED STRUCTURE LOCATION
- PROPOSED TOPOGRAPHIC SURVEY TRANSECTS
- PROPOSED HYDROGRAPHIC SURVEY TRANSECTS

CHOUPIQUE ISLAND

CHOUPIQUE BAYOU

CALCASIEU PARISH

EXISTING CALCASIEU LOCK

HIGHWAY 384

INTERCOASTAL WATERWAY

BLACK BAYOU

CALCASIEU SHIP CHANNEL

PRO-1A, CL-1A, CL-1B, CL-2A, CL-2B, CL-3A, CL-3B, CL-4A, CL-4B, CL-5A, CL-5B, CL-6A, CL-6B, CL-7A, CL-7B, CL-8A, CL-8B, CL-9A, CL-9B, CL-10A, CL-10B, CL-11A, CL-11B, CL-12A, CL-12B, CL-13A, CL-13B, CL-14A, CL-14B, PRO-1B, IW-1A, IW-1B, IW-2A, IW-2B, IW-3A, IW-3B, IW-4A, IW-4B, IW-5A, IW-5B, IW-6A, IW-6B, IW-7A, IW-7B

BE-1A, BE-1B, BE-2A, BE-2B, BE-3A, BE-3B, BE-4A, BE-4B, BE-5A, BE-5B

INSERT A

SCALE: 1" = 400'

400' 0 400' 800' 1200'

US Army Corps of Engineers®
NEW ORLEANS DISTRICT

| | APPR. | DATE | DESCRIPTION |
|---|---|---|---|
| | | | |
| | APPR. | DATE | DESCRIPTION |
| | | | |
| | | | |
| MARK | | | |

DESIGNED BY: BML | DRN. BY: BML | CKD BY: KHW | SUBMITTED BY: K.D. | PLOT SCALE: 400ft | PLOT DATE: 13/13/12 | SIZE: ANSI D | FILE NAME: XXXXXXXX.dgn

DATE: MARCH 2012 | SOLICITATION NO.: W912P9-##-X-#### | CONTRACT NO.: W912P9-##-X-#### | FILE NUMBER: H-##-#####

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

CALCASIEU RIVER AND PASS
CALCASIEU LOCK REPLACEMENT STUDY

# SURVEY REQUEST

CALCASIEU PARISH, LA

SHEET IDENTIFICATION
S-01

## George, Timothy K MVS

**To:** Castellanos, David
**Subject:** RE: [EXTERNAL] Re: Calcasieu Lock mitigation

-----Original Message-----
From: Castellanos, David [mailto:david_castellanos@fws.gov]
Sent: Friday, December 20, 2013 11:43 AM
To: Jeff Harris; George, Timothy K MVS
Subject: [EXTERNAL] Re: Calcasieu Lock mitigation

Jeff,

Here are the results of our field trip. Data sheets, short write up, and site location map. I have photos too, but too much to send in email. If you have an ftp I could place them. I should have ftp access over here, but it's been a while I'll have to figure out how to do it.

On Thu, Dec 5, 2013 at 3:24 PM, Jeff Harris <Jeff.Harris@la.gov> wrote:

David–

Presumably you saw my earlier e-mail to Tim George in St. Louis. We have a bottleneck I'm hoping you can help alleviate.

The information in Appendices I and P of the Draft EIS is not detailed enough to determine whether or not the ridge is wet, according to DNR standards. And if it is wet, it may require mitigation under our standards, but there isn't enough information to determine if the proposed mitigation is adequate.

What is needed by OCM Mitigation staff is the percentage of each tree species present on the ridge. That will tell us whether the ridge is a wetland for our purposes, and will also give an idea as to whether the removal of inappropriate species will be adequate mitigation.

Tim said that the site visit to the ridge involved doing a casual assessment from the boat. He's considering another trip down here to do a more detailed investigation, but that will take several weeks and my Consistency deadline is looming. Not a fatal problem, but additional hoops are created. Alternate B would be to have OCM's Field Investigator take a look, but Kaili is out on leave until January.

So… Do you happen to have the data already? Or, could you or someone else in the Service conveniently obtain it?

Elevation information would be useful, too. I guess I'll have to ask the Corps for that, unless USFWS did some work there at some point?

Thanks for your help,

--Jeff
--

(337) 291-3100

**U.S. FISH AND WILDLIFE SERVICE**
**ECOLOGICAL SERVICES**
**646 Cajundome Blvd. Suite 400**
**Lafayette, LA 70506**
**(318) 291-3111 (Clark), 3100 (Main)**
**FAX (318) 291-3139**
**E-mail: Darryl_Clark @fws.gov**

December 19, 2013

**Calcasieu Lock Replacement December 17, 2013 Field Trip Report**

Participants: Tim George, Corps of Engineers, St. Louis District; David Castellanos, FWS.

Trip members met at Calcasieu Lock, briefly discussed plan to collect data, then proceeded to area just south of the GIWW on Highway 384 to begin inspection of forested spoil/ridge habitats that might be impacted by a the proposed new channel which would be constructed immediately south of the existing lock.

Location

The project is located south of the existing lock located about 7 miles northwest from Grand Lake, LA near the intersection of the Gulf Intracoastal Waterway (GIWW) and the "Devil's Elbow" portion of Calcasieu River in Calcasieu Parish

Project Description

The proposed project consists of constructing a new channel south of the existing lock and west of the Highway 384 bridge (see map) to allow greater drainage capability and reduce water velocity through the existing lock.

We collected data at 6 sites that were forested (map and field data sheets). They ranged in elevation from about 11ft NAVD to about 3ft NAVD. Sites 1 and 2 were dominated by sugar berry. Site 3a was dominated by Chinese tallow and the rest were densely covered with yaupon and Crataegus sp.. Areas between sites were mostly yaupon and Crataegus sp. Lower areas between spoil ridges were densely covered with Baccharis and marsh grasses such as Spartina patens. The slopes of the ridges were steep and there was no discernable transition to bottomland species on the edges before the Baccharis. There seemed to be a greater presence of sugar berry on the edge of the GIWW, but no large groups of trees. We also observed loblolly pine, a multiflora rose species. Chinese tallow was only observed in one area where there was standing water present.

We did not visit the forested area located at the northwest part of the proposed project are. It appears to be oil location canal spoil banks and maybe somewhat different from the area we investigated. In general the area is lower in elevation than most of the areas we visited.


Mb
BLH
Site 6_10 ft elev
93°17'30.1"W, 30°5'6.2"N
Baccharis
Site 3b_ 6 ft elev.
93°17'20.1"W, 30°5'0.7"N
Site 3a_5 ft elev.
93°17'18.4"W, 30°5'0.8"N
Site 3_approx 11 ft elev.
93°17'17.2"W, 30°5'0.5"N
Site 2_ 3 ft elev.
93°17'16.4"W, 30°4'59.9"N
Site 1_ 5 ft elev.
93°17'13.7"W, 30°4'58.6"N
path of site visit
Black needle rush
Mbow

WVA/HES Data Sheet BOTTOMLAND HARDWOODS/SWAMP
Date: 12/17/2013 Time: 14:24 Project: Calc Lock

Site #/lat-lon: 30°05'06.2"/93°17'30.1" Name: Site #6 (Lucas on map)
DESCRIPTION/COMMENTS (including topography, evidence of hydrology, disturbance, adjacent land uses):
side slope of spoil bank, no evidence of hydrology (some hurricane debris)

TREE SPECIES ASSOCIATION VARIABLE 1:
(Non-mast/inedible seed producers: eastern cottonwood, black willow, American sycamore, Chinese tallow)
(Swamp must have ≥ 33 % canopy cover & ≥ 60 %cypress, tupelo, button bush, planer tree, red maple, present)
Percent overstory canopy hardmast: 0 Percent overstory canopy cypress: 0
Percent overstory canopy softmast/edible seed producers: 0 [but Ilex vomitoria is dominant ~~among the~~ canopy ~~90%~~ 100%]
Percent overstory canopy closure: 5
**UNDERSTORY/MIDSTORY (VARIABLE 3 (1)):**
Percent understory : 2 /species chinese privet, Ilex vomitoria, Baccharis

Tree Species in Understory (include height/indicate abundance) Ø

Percent midstory : 80 /species chinese privet, Ilex vomitoria, Baccharis, Smilax, ~~fecthous baby~~, multiflora rose
Tree Species in Midstory (include height/indicate abundance) Ø
Crataegus spp. – only branches in mid trunks, not in plot

**STAND MATURITY (VARIABLE 2):**
(**Age or d.b.h. can be used**. Canopy-dominant and co-dominant are those trees whose crowns rises above or is an integral part of the stands overstory. For trees with buttress swell d.b.h. is measured at 12" above the swell for WVA and 18" for HES) **Comments**-(stand conditions, etc):

AGE: _____ or TREE SPECIES – with D.B.H.

Pinus ~~sp~~ (clobbly) – 2.8", 11.0"

Ilex vomitoria – 0.5–1.5" dbh – thick growth of this species

NOTE: We saw prickly pear at two locations today, plus (not sample sites), multiflora rose in many places

**HYDROLOGY (VARIABLE 4) (BLH)**—Class: 1(Forced/Highly altered) Class 2 (Altered) Class 3 (minor alteration) – (**Swamp**) Class 1(Forced/Highly altered) Class 2 (Altered; stagnant-impounded w/no exchange or minor surface flooding) Class 3 (permanently flooded w/no exchange) Class 4 (minor alterations) (**Percent of flooding**) Percent of area flooded during growing season (indicate approximate end of flooding: July-Aug-Sept) Class 1 – highly altered

**NUMBER OF SNAGS** (≥8' and ≥6" dbh):# 0 /#total snags 0 /#future snags 0

**HARDMAST PROXIMITY** from site (# of species of oak/pecan & distance) #sps / feet unknown

WVA/HES Data Sheet BOTTOMLAND HARDWOODS/SWAMP
Date: 12/17/2013 Time: 13:06 Project:

Site #/lat-lon: 30°05'00.7"/93°17'20.1" Name: Site 38
DESCRIPTION/COMMENTS (including topography, evidence of hydrology, disturbance, adjacent land uses):
top of small ridge, no hydrology

TREE SPECIES ASSOCIATION VARIABLE 1:
(Non-mast/inedible seed producers: eastern cottonwood, black willow, American sycamore, Chinese tallow)
(Swamp must have ≥ 33 % canopy cover & ≥ 60 %cypress, tupelo, button bush, planer tree, red maple, present)
Percent overstory canopy hardmast: 0 Percent overstory canopy cypress: 0
Percent overstory canopy softmast/edible seed producers:
Percent overstory canopy closure:
**UNDERSTORY/MIDSTORY (VARIABLE 3 (1)):**
Percent understory : 1 /species Ilex vanitoria

Tree Species in Understory (include height/indicate abundance) Ø

Percent midstory : /species Ilex vanitoria, briar (vine)

Tree Species in Midstory (include height/indicate abundance) Ø

**STAND MATURITY (VARIABLE 2):**
(**Age or d.b.h. can be used**. Canopy-dominant and co-dominant are those trees whose crowns rises above or is an integral part of the stands overstory. For trees with buttress swell d.b.h. is measured at 12" above the swell for WVA and 18" for HES) **Comments**-(stand conditions, etc):

AGE: or TREE SPECIES – with D.B.H.

Ilex vanitoria – dense

Sugarberry – 1 individual

**HYDROLOGY (VARIABLE 4) (BLH)**—Class: 1(Forced/Highly altered) Class 2 (Altered) Class 3 (minor alteration) – (**Swamp**) Class 1(Forced/Highly altered) Class 2 (Altered; stagnant-impounded w/no exchange or minor surface flooding) Class 3 (permanently flooded w/no exchange) Class 4 (minor alterations) (**Percent of flooding**) Percent of area flooded during growing season (indicate approximate end of flooding: July-Aug-Sept) Class 1

**NUMBER OF SNAGS** (≥8' and ≥6" dbh):#/#total snags /#future snags

**HARDMAST PROXIMITY** from site (# of species of oak/pecan & distance) #sps feet

WVA/HES Data Sheet BOTTOMLAND HARDWOODS/SWAMP
Date: 12-17-2013 Time: 12:33 Project: Calc. Lock

Site #/lat-lon: 30°05'00.8"/93°17'18.4" Name: site 3A 1/4 plot
DESCRIPTION/COMMENTS (including topography, evidence of hydrology, disturbance, adjacent land uses):
depressional area on top of spoil bank ; standing water

TREE SPECIES ASSOCIATION VARIABLE 1:
(Non-mast/inedible seed producers: eastern cottonwood, black willow, American sycamore, Chinese tallow)
(Swamp must have ≥ 33 % canopy cover & ≥ 60 %cypress, tupelo, button bush, planer tree, red maple, present)
Percent overstory canopy hardmast: 0 Percent overstory canopy cypress: 0
Percent overstory canopy softmast/edible seed producers: 15
Percent overstory canopy closure: 40
**UNDERSTORY/MIDSTORY (VARIABLE 3 (1)):**
Percent understory : 1 /species briar, I. vomitoria, bunk grass, Eupatorium sp. [fern, herb]

Tree Species in Understory (include height/indicate abundance) ∅

Percent midstory : 30 /species Ilex vomitoria, tallow, ~~[illegible]~~ Baccharis

Tree Species in Midstory (include height/indicate abundance) tallow, ~~Baccharis sp~~

**STAND MATURITY (VARIABLE 2):**
(**Age or d.b.h. can be used**. Canopy-dominant and co-dominant are those trees whose crowns rises above or is an integral part of the stands overstory. For trees with buttress swell d.b.h. is measured at 12" above the swell for WVA and 18" for HES) **Comments**-(stand conditions, etc):

AGE: _____ or TREE SPECIES – with D.B.H.

tallow 1.5, 1.0, 1.0, 4.7, 2.1, 1.0, 2.5, 0.5, 2.3, 4.8, 1.5

" 2.6, 5.1, 1.6, 1.4, 2.8, 1.2, 1.5, 1.5, 1.5, 3.5, 2.5,

2.0, 2.5, 3.6, 8.1, 4.7, 0.75,

Sugarberry - 3.7, 1.5, 3.7, 4.2, 2.7, 3.4

**HYDROLOGY (VARIABLE 4) (BLH)**—Class: 1(Forced/Highly altered) Class 2 (Altered) Class 3 (minor alteration) – (**Swamp**) Class 1(Forced/Highly altered) Class 2 (Altered; stagnant-impounded w/no exchange or minor surface flooding) Class 3 (permanently flooded w/no exchange) Class 4 (minor alterations) (**Percent of flooding**) Percent of area flooded during growing season (indicate approximate end of flooding: July-Aug-Sept) BLH Class 3- minor

**NUMBER OF SNAGS** (≥8' and ≥6" dbh):# 1 (>6) /#total snags _____ /#future snags 0

**HARDMAST PROXIMITY** from site (# of species of oak/pecan & distance) #sps 1 feet [illegible]

WVA/HES Data Sheet BOTTOMLAND HARDWOODS/SWAMP
Date: 12-17-2013 Time: 11:37 Project: Calc. Lock

Site #/lat-lon: 30°05'00.5", 93°17'17.2" Name: site #3 1/4 plot
DESCRIPTION/COMMENTS (including topography, evidence of hydrology, disturbance, adjacent land uses):
highest of 3 sites so far; ~11 ft. elevation, no hydrology, some hurricane debris (boat)

David Castellano, Tim George

TREE SPECIES ASSOCIATION VARIABLE 1:
(Non-mast/inedible seed producers: eastern cottonwood, black willow, American sycamore, Chinese tallow)
(Swamp must have ≥ 33 % canopy cover & ≥ 60 %cypress, tupelo, button bush, planer tree, red maple, present)
Percent overstory canopy hardmast: 0 Percent overstory canopy cypress: 0
Percent overstory canopy softmast/edible seed producers: 100
Percent overstory canopy closure: 75 * Crataegus sp.

**UNDERSTORY/MIDSTORY (VARIABLE 3 (1)):**
Percent understory: 1 /species ~~d. holly~~, Ilex vomitoria

Tree Species in Understory (include height/indicate abundance) d. holly

Percent midstory: 50 /species ~~d. holly~~ (branches of overstory), unknown shrubby briar (woody)
Ilex vomitoria

Tree Species in Midstory (include height/indicate abundance) * ~~d. holly~~, Ilex vomitoria
75% 25%
* Crataegus sp.

**STAND MATURITY (VARIABLE 2):**
(**Age or d.b.h. can be used**. Canopy-dominant and co-dominant are those trees whose crowns rises above or is an integral part of the stands overstory. For trees with buttress swell d.b.h. is measured at 12" above the swell for WVA and 18" for HES) **Comments**-(stand conditions, etc):

D.L.C. green hawthorn? maybaw?

AGE: _____ or TREE SPECIES – with D.B.H.

Crataegus sp.
* ~~deciduous holly~~ 3.1, 2.3, 1.4, 1.4, 4.0, 1.0, 2.5, 1.0, 0.75, 0.50, 1.0, 1.0
" 1.3, 1.2, 1.3, 1.8, 1.0, 0.50, 1.0, 0.5, 1.0, 1.2, 2.7,
" 4.0, 1.6, 3.0, 0.5, 1.0, 1.1, 2.7, 3.0, 2.6, 1.0, 1.0
" 1.5, 1.6

Ilex vomitoria — most are small (we overlooked vomitoria during measurements) not distinguished in clone members

**HYDROLOGY (VARIABLE 4) (BLH)**—Class: 1(Forced/Highly altered) Class 2 (Altered) Class 3 (minor alteration) – (**Swamp**) Class 1(Forced/Highly altered) Class 2 (Altered; stagnant-impounded w/no exchange or minor surface flooding) Class 3 (permanently flooded w/no exchange) Class 4 (minor alterations) (**Percent of flooding**) Percent of area flooded during growing season (indicate approximate end of flooding: July-Aug-Sept) Class 1 - highly altered

**NUMBER OF SNAGS** (≥8' and ≥6" dbh):# 0 /#total snags 0 /#future snags 0

**HARDMAST PROXIMITY** from site (# of species of oak/pecan & distance) #sps 1 feet unknown

WVA/HES Data Sheet BOTTOMLAND HARDWOODS/SWAMP
Date: 12-17-2013 Time: 11:11 Project: Cale Lock

Site #/lat-lon: 30° 04' 59.9", 93° 17' 16.4" Name: Site #2 1/4 plot

DESCRIPTION/COMMENTS (including topography, evidence of hydrology, disturbance, adjacent land uses):
transition or edge of spoil bank; wrack lines, ground looks moist

TREE SPECIES ASSOCIATION VARIABLE 1:
(Non-mast/inedible seed producers: eastern cottonwood, black willow, American sycamore, Chinese tallow)
(Swamp must have ≥ 33 % canopy cover & ≥ 60 %cypress, tupelo, button bush, planer tree, red maple, present)
Percent overstory canopy hardmast: 0 Percent overstory canopy cypress: 0
Percent overstory canopy softmast/edible seed producers: 100 Haws (no deciduous holly)
Percent overstory canopy closure: 1-5%
**UNDERSTORY/MIDSTORY (VARIABLE 3 (1)):** *yaupon/crataegus sp.
Percent understory : 5 /species ~~unknown grass~~, ~~dahoon holly~~, sugarberry, briar (blackberry?)

Tree Species in Understory (include height/indicate abundance) *~~d. holly~~, sugarberry
2 ~~12~~ 3

Percent midstory : 80 /species Baccharis, d. holly

Tree Species in Midstory (include height/indicate abundance) *~~d. holly~~
*~~d. holly~~, Sugarberry (brambles)

**STAND MATURITY (VARIABLE 2):**
(**Age or d.b.h. can be used**. Canopy-dominant and co-dominant are those trees whose crowns rises above or is an integral part of the stands overstory. For trees with buttress swell d.b.h. is measured at 12" above the swell for WVA and 18" for HES) **Comments**-(stand conditions, etc):

AGE: _____ or TREE SPECIES – with D.B.H.

Sugarberry – injured 8.3", 8.5, 4" (est.), 2.9, 3.4, 7 (est)

**HYDROLOGY (VARIABLE 4) (BLH)**—Class: 1(Forced/Highly altered) Class 2 (Altered) Class 3 (minor alteration) – (**Swamp**) Class 1(Forced/Highly altered) Class 2 (Altered; stagnant-impounded w/no exchange or minor surface flooding) Class 3 (permanently flooded w/no exchange) Class 4 (minor alterations) (**Percent of flooding**) Percent of area flooded during growing season (indicate approximate end of flooding: July-Aug-Sept) Class 3 - minor alt.

**NUMBER OF SNAGS** (≥8' and ≥6" dbh):# 0 /#total snags 0 /#future snags 1

**HARDMAST PROXIMITY** from site (# of species of oak/pecan & distance) #sps 1 feet unknown

WVA/HES Data Sheet BOTTOMLAND HARDWOODS/SWAMP
Date: 12-17-13 Time: 10:24 Project: Cole Lock 1/4 plot used

Site #/lat-lon: 30 04 58.6 93 17 13.7 Name: David Castellano Tim Groover

DESCRIPTION/COMMENTS (including topography, evidence of hydrology, disturbance, adjacent land uses):
first site ~~#1~~: land elevation on Google maps, 4 ft
~~site #2 on map~~
hyarology - no evidence
hurricane debris on ground

TREE SPECIES ASSOCIATION VARIABLE 1:
(Non-mast/inedible seed producers: eastern cottonwood, black willow, American sycamore, Chinese tallow)
(Swamp must have ≥ 33 % canopy cover & ≥ 60 %cypress, tupelo, button bush, planer tree, red maple, present)
Percent overstory canopy hardmast: 0 Percent overstory canopy cypress: 0
Percent overstory canopy softmast/edible seed producers: 100
Percent overstory canopy closure: 10

**UNDERSTORY/MIDSTORY (VARIABLE 3 (1)):**
Percent understory : 2 /species pepperwine, ~~deciduous holly~~, yaupon - Ilex vomitoria, Smilax sp.

Tree Species in Understory (include height/indicate abundance) d. holly

Percent midstory : 75 /species ~~d. holly~~ yaupon

Tree Species in Midstory (include height/indicate abundance) ~~d. holly~~ yaupon
3'-12' / 15 individuals

**STAND MATURITY (VARIABLE 2):**
(**Age or d.b.h. can be used**. Canopy-dominant and co-dominant are those trees whose crowns rises above or is an integral part of the stands overstory. For trees with buttress swell d.b.h. is measured at 12" above the swell for WVA and 18" for HES) **Comments**-(stand conditions, etc):

AGE: _____ or TREE SPECIES – with D.B.H.
D.B.H.
yaupon
~~d. holly~~ - 3/4" - 1 1/2" dbh range
sugarberry - 3.1, 4.3, 3.4, 5.8, 3.1, 2.7, 7.3, 2.7, 3.7

* 30 04 59.3 93 17 15.4 thick Boechmeria 50' in all directions
check elevation

**HYDROLOGY (VARIABLE 4) (BLH)**—Class: 1(Forced/Highly altered) Class 2 (Altered) Class 3 (minor alteration) – (**Swamp**) Class 1(Forced/Highly altered) Class 2 (Altered; stagnant-impounded w/no exchange or minor surface flooding) Class 3 (permanently flooded w/no exchange) Class 4 (minor alterations) (**Percent of flooding**) Percent of area flooded during growing season (indicate approximate end of flooding: July-Aug-Sept) Class 1 - altered (spoil bank)

**NUMBER OF SNAGS** (≥8' and ≥6" dbh):# 0 /#total snags 0 /#future snags 0

**HARDMAST PROXIMITY** from site (# of species of oak/pecan & distance) #sps 1 feet ~~>200~~ unknown saw none on field trip

BOBBY JINDAL
GOVERNOR

STEPHEN CHUSTZ
SECRETARY

# State of Louisiana

## DEPARTMENT OF NATURAL RESOURCES
## OFFICE OF COASTAL MANAGEMENT

December 23, 2013

Timothy George
U.S. Army Corps of Engineers
St. Louis District
1222 Spruce Street
St. Louis, MO 63103-2833

RE: C20130270, Coastal Zone Consistency
**U.S. Army Corps of Engineers, New Orleans District**
Direct Federal Action- negative determination
Calcasieu Lock Feasibility Report, topographic and bathymetric survey -- negative coastal zone consistency determination, **Cameron Parish, Louisiana**

Dear Mr. George:

This office has received the above referenced negative consistency determination, in accordance with Section 307(c) of the Federal Coastal Zone Management Act of 1972, as amended. After careful review we have determined that the project does not demonstrate any reasonably foreseeable effects on coastal uses or resources. Therefore we concur with your negative determination, as described by NOAA regulations on federal consistency at 15 CFR §930.35.

Please refer to the above Consistency number when corresponding on this matter. If you have any questions please call Jeff Harris of the Consistency Section at (225) 342-7949.

Sincerely,

for Don Haydel
Administrator
Interagency Affairs/Field Services Division

DH/jdh

cc: David Butler, LDWF
Kaili Mills, OCM FI

Post Office Box 44487 • Baton Rouge, Louisiana 70804-4487
617 North Third Street • 10th Floor • Suite 1078 • Baton Rouge, Louisiana 70802
(225) 342-7591 • Fax (225) 342-9439 • http://www.dnr.louisiana.gov

Louisiana Department of Natural Resources

COASTAL MANAGEMENT DIVISION

Federal Consistency Determination Statement and Recommendation Sh

Consistency Number **C20130270**

Applicant / Agency **COE**

Project Title (If Applicable) Negative determination for Calcasieu Lock feasibility report - topographic & bathymetric surveys

Salient Points / Issues Negative determination

Bathymetry/elevation survey on foot + by airboat.
Minimal traverse of marsh

Objections

**Recommendation:** **Concurrence** **OCZ** **Denial**

List and Discuss Pertinent Guidelines if Denial Recommend

Additional Action?

**Recommendation By:**

(Coastal Resource Analyst)

(date)

**Reviewed By:**

Greg D. Harris

12-23-13

(date)

BOBBY JINDAL
GOVERNOR

STEPHEN CHUSTZ
SECRETARY

# State of Louisiana

## DEPARTMENT OF NATURAL RESOURCES

## OFFICE OF COASTAL MANAGEMENT

January 14, 2014

Timothy K. George
Environmental Compliance Section CEMVP-PD-C
U.S. Army Corps of Engineers, St. Louis District
1222 Spruce Street
St. Louis, Missouri 63103-2833

RE: **C20130015,** Coastal Zone Consistency
**U. S. Army Corps of Engineers**
Direct Federal Action
Calcasieu Lock Replacement project**, Cameron Parish**

Dear Mr. George:

This office has received the above referenced federal application for consistency review with the approved Louisiana Coastal Resources Program in accordance with Section 307(c) of the Federal Coastal Zone Management Act of 1972, as amended. NOAA Regulations on Federal Consistency, at 15 CFR §930.41(a), allow 60 days for the review of Direct Federal Activities, and at §930.41(c)(b) allow additional review time upon mutual agreement between the Federal agency and the State Coastal Zone Program. This letter is to confirm that the Office of Coastal Management and the U.S. Army Corps of Engineers have mutually agreed to extend the State review time to February 14, 2014.

A final determination will be made within the authorized time period. If you have any questions please contact Jeff Harris of the Consistency Section at (225) 342-7949.

Sincerely,

Don Haydel
Acting Administrator
Interagency Affairs/Field Services Division

DH/jdh

cc: Jeff Varisco, COE-NOD

BOBBY JINDAL
GOVERNOR

STEPHEN CHUSTZ
SECRETARY

# State of Louisiana

## DEPARTMENT OF NATURAL RESOURCES
## OFFICE OF COASTAL MANAGEMENT

February 14, 2014

Timothy K. George
Environmental Compliance Section CEMVP-PD-C
U.S. Army Corps of Engineers, St. Louis District
1222 Spruce Street
St. Louis, Missouri 63103-2833

RE: **C20130015,** Coastal Zone Consistency
**U. S. Army Corps of Engineers**
Direct Federal Action
Calcasieu Lock Replacement project**, Cameron Parish**

Dear Mr. George:

The above referenced project has been reviewed for consistency with the Louisiana Coastal Resources Program in accordance with Section 307 (c) of the Coastal Zone Management Act of 1972, as amended. The project, as proposed in this application, is consistent with the LCRP.

If you have any questions concerning this determination please contact Jeff Harris of the Consistency Section at (225) 342-7949.

Sincerely,

Don Haydel
Acting Administrator
Interagency Affairs/Field Services Division

DH/jdh

cc: Jeff Varisco, COE-NOD
Kaili Mills, OCM FI
Dave Butler, LDWF